215

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SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 13 IN SET 188

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TO

Model 2D1235B

Truetone Model 2D1235B is identical to Model 2D1235A, covered in Photofact Folder 13, Set 188, except, a different tuner (part # 25A1102) is used. This tuner is identical to tuner (part #25A1080) used in Model 2D1235A except for the following:

C11 and C17B were changed to 800MMF, feed thru type, capacitors.

An 800MMF, feed thru type, capacitor was added from the AGC lead to ground.

An 800MMF, feed thru type, capacitor was added from the heater input to ground.

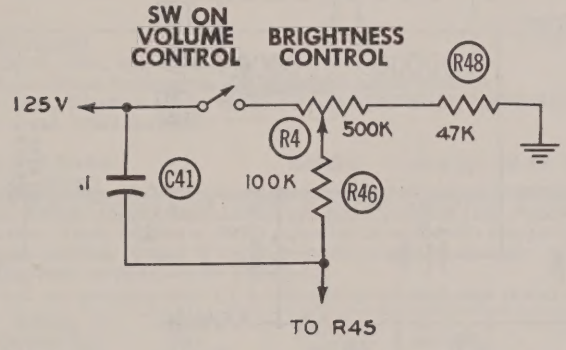
Models 2D1235C 2D1235D

Models 2D1235C and 2D1235D are identical to Model 2D1235A except, for the following:

A 17HP4 picture tube is used in place of the 17TP4 used in Model 2D1235A and B.

An AGC threshold control was added to the chassis. This circuit consists of a 2.5Meg potentiometer (part #40X364) and a 2.7Meg resistor connected in series, and added between the AGC lead to the tuner and the 125 volt line. This control and resistor combination take the place of the 3.9Meg resistor (R34) which is omitted when the control is used. To adjust the control, tune in the strongest available signal and turn the clockwise until overloading occurs. Then turn the control a few degrees counter clockwise until the overloading disappears.

The off/on switch was changed to a DPST switch, part #78X13 (includes contrast and volume controls). The additional pole of this switch is connected between the brightness control and the 125 volt source, so that when the receiver is turned off the brightness control is disconnected from the 125 volt source. A partial schematic, showing this circuit is given below.



A 100K, 2 watt resistor was added across the fuse (M1). This change was made to prevent shock in case of fuse failure by allowing a path for the input filter capacitor to discharge.

A different tuner (part #25A1094) is also used in Models 2D1235C and 2D1235D. A schematic of this tuner is given on the reverse side. For alignment refer to Photofact Folder 13, Set 188.

Model 2D1235E is identical to Model 2D1235D except, a 6AX4 damper tube is used in place of the 6W4. When the 6AX4 tube is used the lead from terminal 3 of the horizontal output transformer (T3) to pin 7 of the damper tube is removed. Pin 7 of the damper is then grounded. This change was made to reduce radiation into nearby broadcast receivers through the AC line.

TRUETONE MODELS 2D1235B, 2D1235C, 2D1235D, 2D1235E

PRODUCTION CHANGES
BULLETIN 74

PRODUCTION CHANGES
BULLETIN 74

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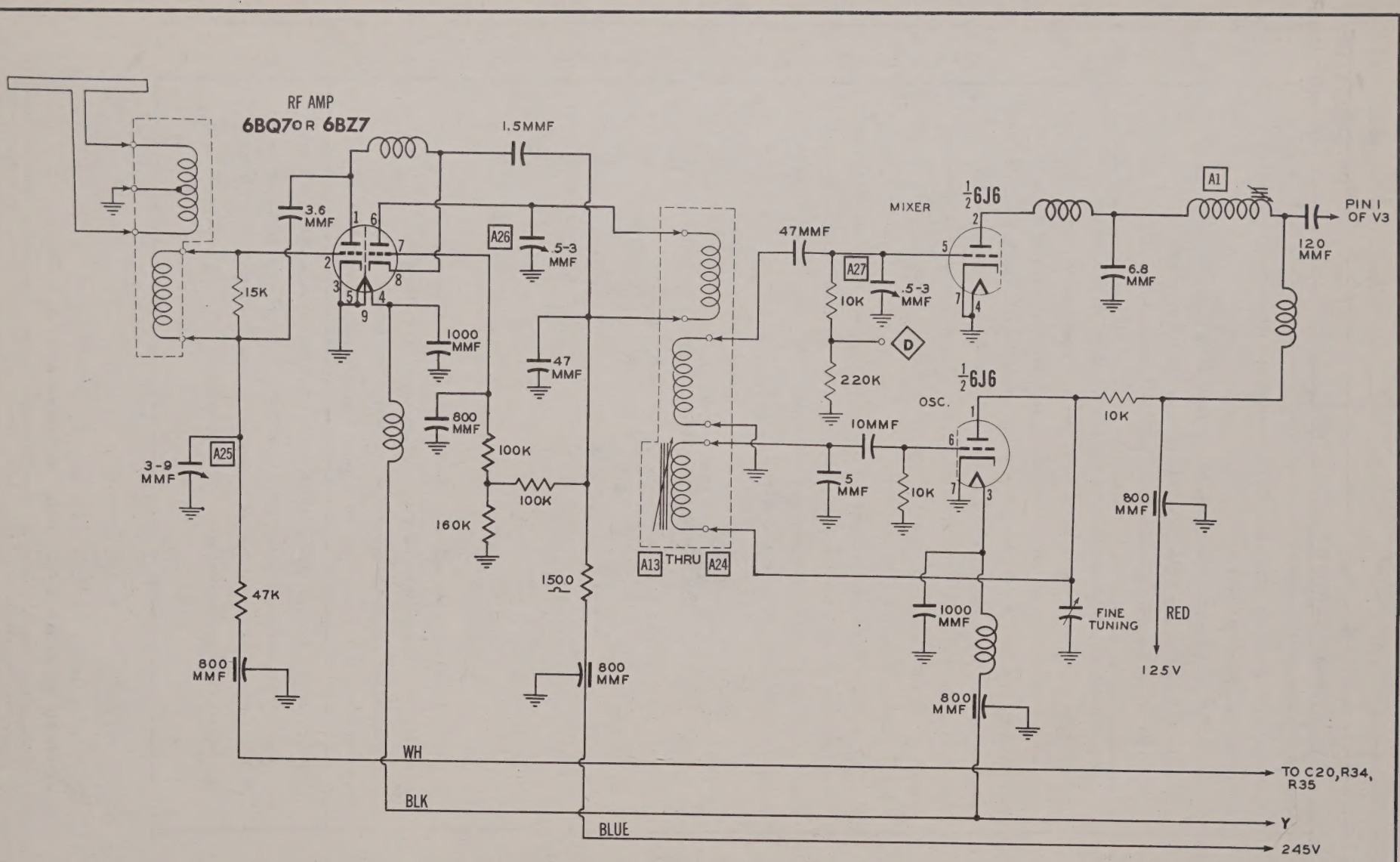
RF AMP
6BQ7 OR 6BZ7
1.5MMF
3.6 MMF
15K
A26
.5-3 MMF
1000 MMF
47 MMF
800 MMF
100K
100K
160K
1500
A25
3-9 MMF
47K
800 MMF
800 MMF
A13 THRU A24
47MMF
A27
10K
.5-3 MMF
D
220K
MIXER
1/2 6J6
OSC.
1/2 6J6
10MMF
5 MMF
10K
10K
A1
PIN 1 OF V3
120 MMF
6.8 MMF
800 MMF
1000 MMF
FINE TUNING
RED
125V
800 MMF
WH
BLK
BLUE
TO C20, R34, R35
Y
245V

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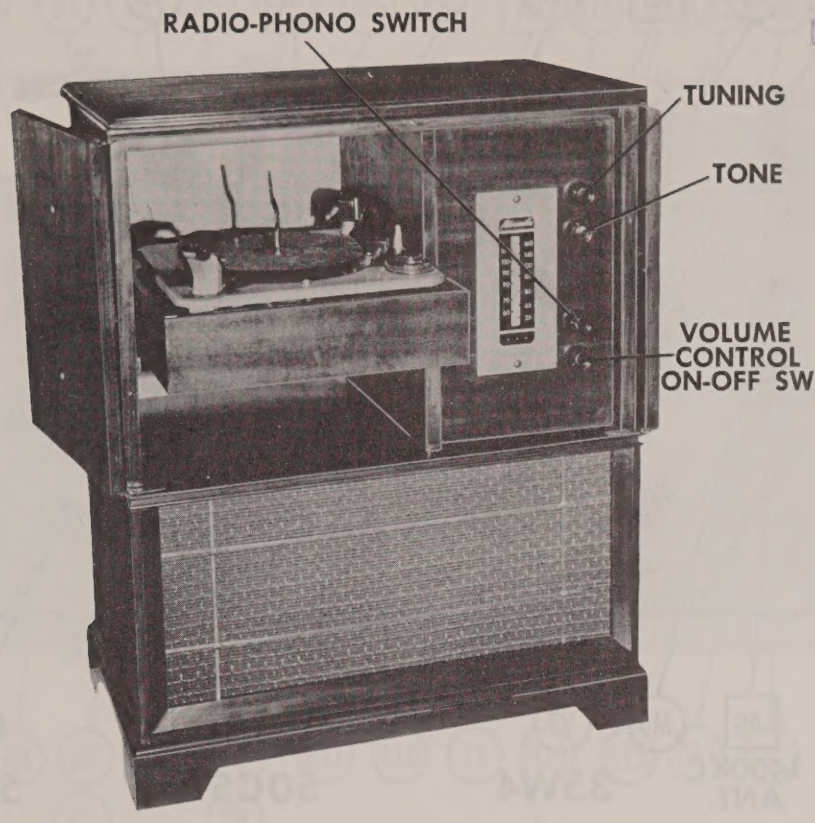
L. F. FRANKENSHIP



AIRCASTLE
MODEL 472.254

AIRCASTLE
MODEL 472.254

TRADE NAME	Aircastle Model 472.254
SUPPLIER	Spiegel Inc., 1061 W. 35th. St., Chicago 9, Ill.
TYPE SET	AC Operated Radio-Phono Combination AM Superheterodyne Receiver
TUBES (Seven)	Types 12BE6 Conv., 12BA6 IF Amp., 12AT6 Det.-AVC-AF Amp., 12AT6 Phase Inv., (2) 50C5 audio output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .40 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

Turn tuning capacitor fully closed and set pointer pointer 2 1/4 inches from left hand edge of dial back plate.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	455KC (400%Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1600KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune to 1400KC signal	"	A6	"
4.		"	600KC	Tune to 600KC signal	"		Check tracking at 600KC and bend outer rotor plates on antenna tuning capacitor if necessary for best tracking, then repeat step 3.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det-AVC-AF Amp.	12AT6	12AT6	7BT	
V4	Phase Inverter	12AT6	12AT6	7BT	
V5	Audio Output	50C5	50C5	7CV	
V6	Audio Output	50C5	50C5	7CV	
V7	Rectifier	35W4	35W4	5BQ	

CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRCASTLE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	50	150		PRS150/50-50		EDL5515		2N521	TVA-2453	Note 1
B	50	150								Note 1
C2	5			SI5	TCZ-4.7	5W5V5	GP1K-050	ZT-555	5GA-V5	
C3	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C4	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	Note 2
C5	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C6	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	Note 3
C7A	.01		♦65A-407		♦PC-80		♦1404-01		♦102C1	
B	250									
C										
C8	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C9A	.01		†65A-407		†PC-80		†1404-01		†102C1	
B	250									
C										
C10	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C11	10000		8G-180	BPD-01	DD-103	TM5S1	811-01	DC-511	5HK-S1	Note 4
C12	.05	400	8C-536	RC-2		NF10170			72P51	

Note 1. Some Models use 40MFD in this application (part #8C-490)
Note 2. Not used in all Models.
Note 3. Some Models use .002MFD in this application.
Note 4. Some Models use .1MFD in this application.
♦ Items C7A, C7B, C7C, R7A, R7B are combined in one unit.
When replacing items separately C7B and C7C should total 250MMF.
† Items C9A, C9B, C9C, R9A, R9B are combined in one unit.
When replacing items separately C9B and C9C should total 250MMF.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRCASTLE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1 Meg	½	10A-408	Q13-137	AG-63-Z	BSK-70-S	U-53	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A
R2A	500KΩ	½	10B-409	Q13-133	AG-60-Z	BSK-60	U-48	Tone
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R2A

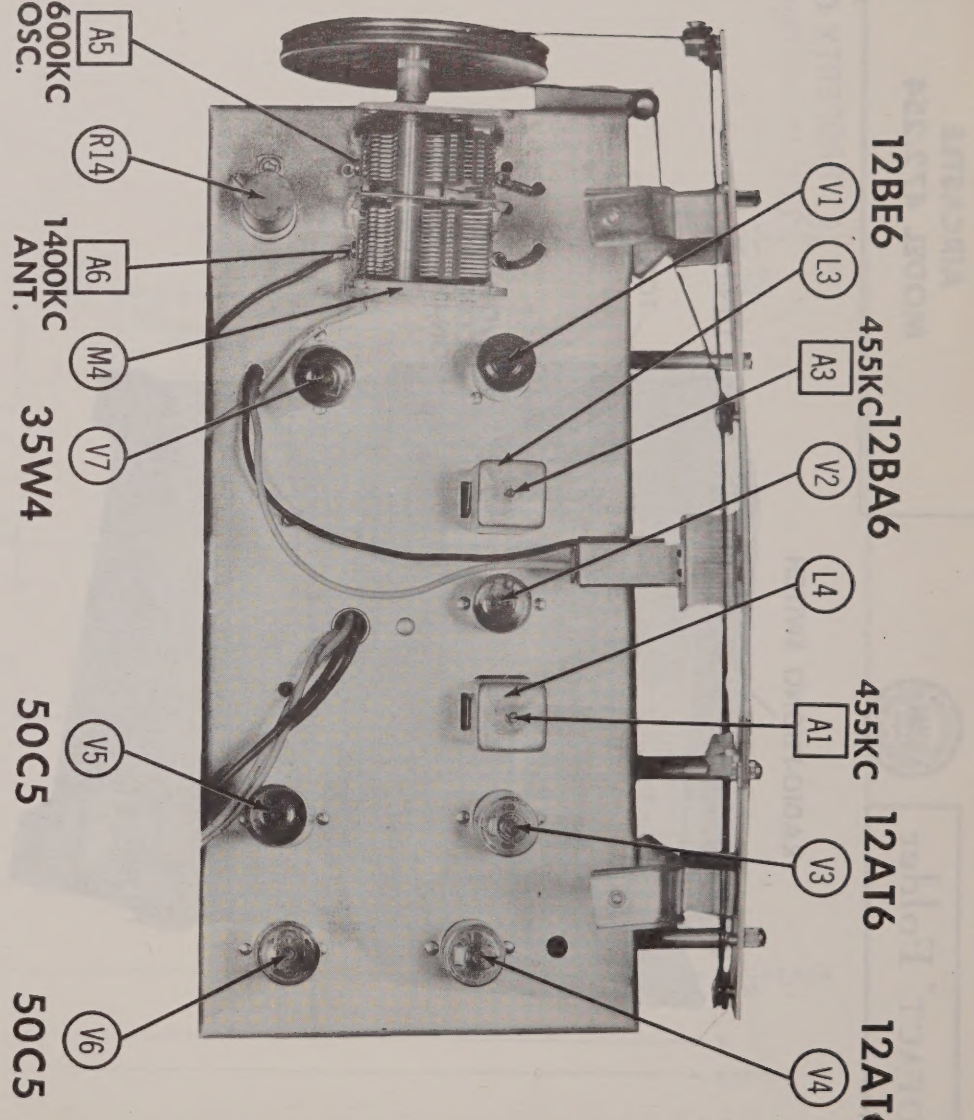
RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: AIRCASTLE PART No.	IRC PART No.	NOTES
R3	22KΩ	½		BTS-22K	
R4	1 Meg	½		BTS-1 Meg	
R5	47KΩ	½		BTS-47K	
R6	4.7Meg	½		BTS-4.7Meg	Note 1
R7A	500KΩ	½	♦65A-407		
B	500KΩ	½			
R8	4.7Meg	½		BTS-4.7Meg	Note 1
R9A	500KΩ	½	†65A-407		
B	500KΩ	½			

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: AIRCASTLE PART No.	IRC PART No.	NOTES
R10	220KΩ	½		BTS-220K	
R11	100Ω	2			Note 2
R12	2200Ω	1		BTA-2200	
R13	220Ω	½		BTS-220	
R14	400Ω	10		1 3/4A-400	
R15	220KΩ	½			Note 3
R16	150KΩ	½		BTS-150K	Note 4

Note 1. Some models may use a 6.8Meg resistor in this application.
Note 2. Some models may use a 150Ω resistor in this application.
Note 3. Some models may use a 220KΩ resistor in this application.
Note 4. Not used in all models.
♦ Items R7A, R7B, C7A, C7B, C7C are combined in one unit.
† Items R9A, R9B, C9A, C9B, C9C are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		AIRCASTLE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	4KΩCT	2.8Ω	226ΩCT	.38Ω	12B401	A-3856	A-2900	RO-301	S-51X	

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	AIRCASTLE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	8"	PM	2.8Ω		ST-116 Mod. P8-U	8A31	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	AIRCASTLE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	1.8Ω		13E-397			69-Osc.	Tapped@ .6Ω
L2	Osc. Coil	5.2Ω		13D-400			12-C1	
L3	Input IF	13Ω	13.5Ω	13A-398	16-6758	BC-352	12-C6	
L4	Output IF	12.5Ω	14Ω	13A-399	16-6770	BC-355		

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	AIRCASTLE PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1		ACD-2J	A-1 (J) A-3 (J)			96-0T	0-1 0-3	

ASTATIC AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THEIR RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

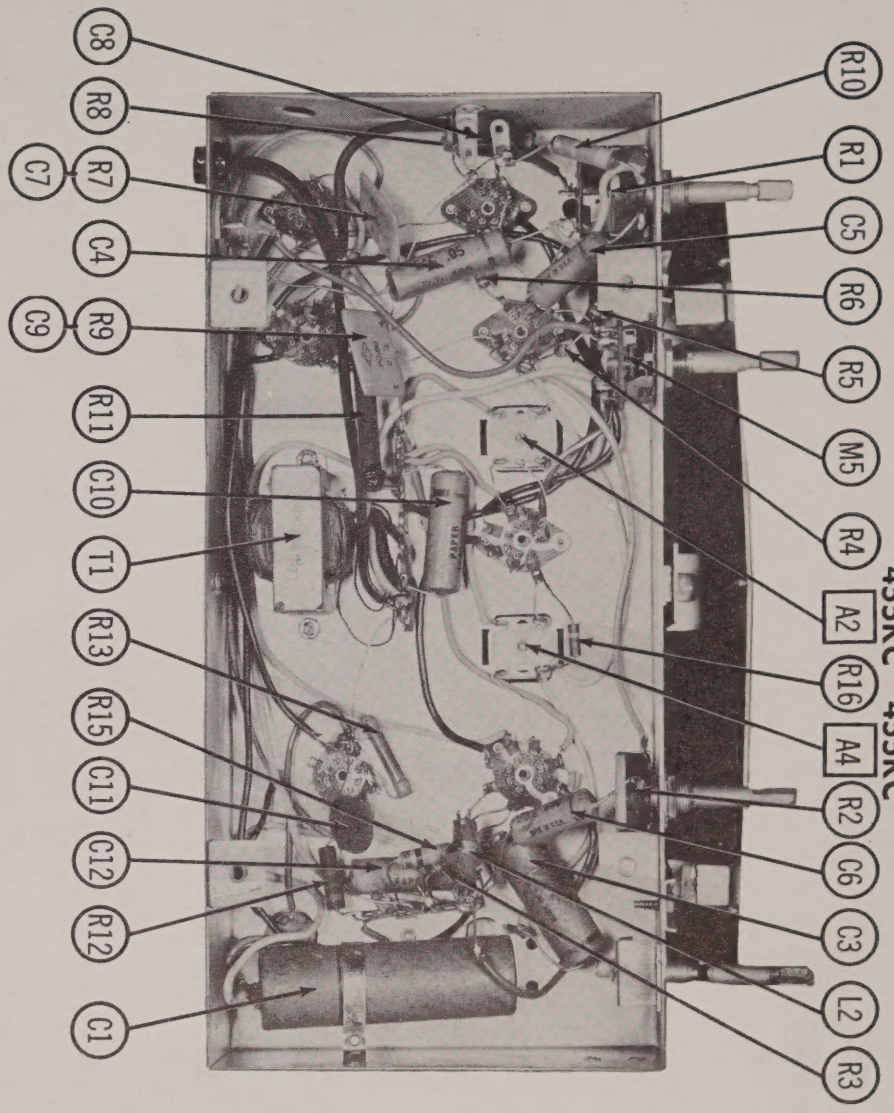
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	AIRCASTLE PART No.	WALCO PART No.	JENSEN PART No.	
M2		W-10S or W-10MGS and W-11 A or W-11MGA	W-14 & W-15 or W-16 & W-17	

MISCELLANEOUS

ITEM No.	PART NAME	AIRCASTLE PART No.	NOTES
M3	Dial Light		Type #47
M4	Tuning Capacitor	8A-411	33-477MMF, 16-196MMF
M5	Switch	20B-410	Radio-Phono Selector
	Pointer	6B-535	

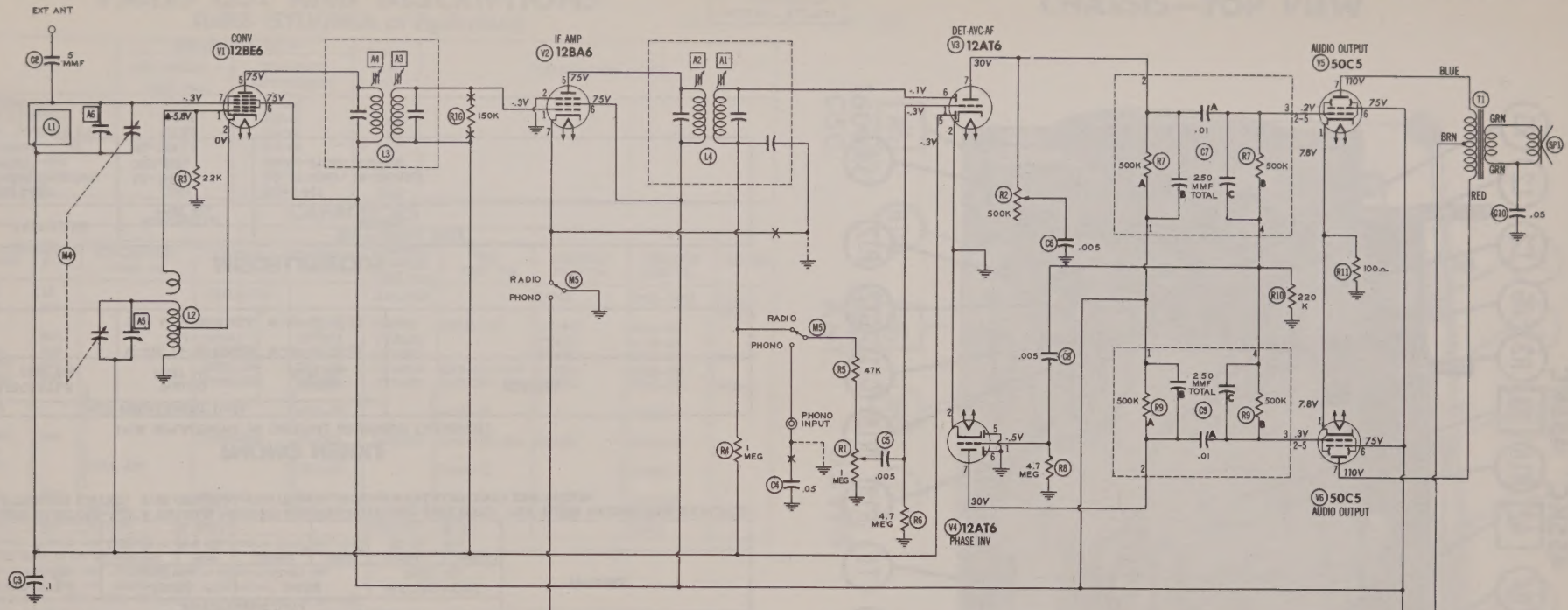
CHASSIS—BOTTOM VIEW

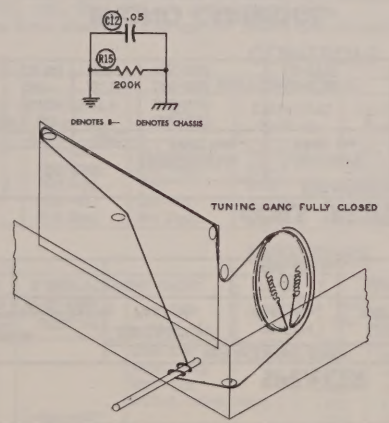


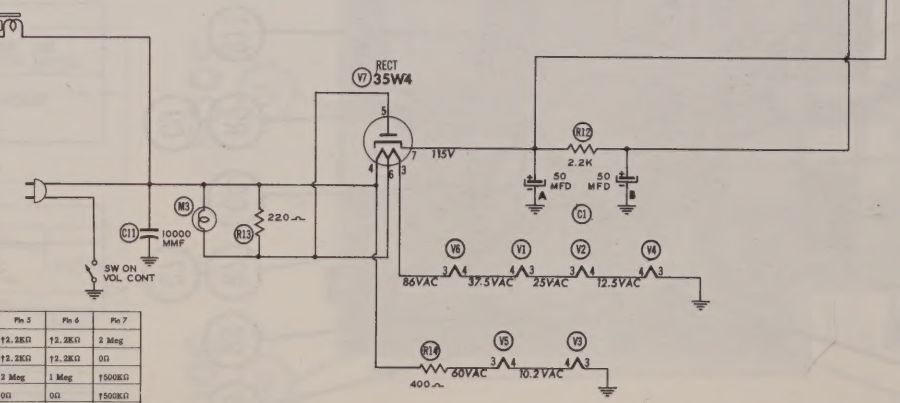
SET 215 FOLDER 2

AIRCASTLE MODEL 472.254

AIRCASTLE MODEL 472.254







RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.6Ω	24Ω	36Ω	†2.2KΩ	†2.2KΩ	2 Meg
V 2	12BA6	2 Meg	0Ω	24Ω	12Ω	†2.2KΩ	†2.2KΩ	0Ω
V 3	12AT6	4.7Meg	0Ω	0Ω	12Ω	2 Meg	1 Meg	†500KΩ
V 4	12AT6	4.7Meg	0Ω	0Ω	12Ω	0Ω	0Ω	†500KΩ
V 5	50C5	100Ω	720KΩ	60Ω	12Ω	720KΩ	2.2KΩ	†123Ω
V 6	50C5	100Ω	720KΩ	75Ω	36Ω	720KΩ	2.2KΩ	†123Ω
V 7	35W4	INF	INF	75Ω	95Ω	90Ω	90Ω	800KΩ

FILAMENT MEASURED WITH PHONO MOTOR DISCONNECTED.
ALL MEASUREMENTS TAKEN IN "RADIO" POSITION
† MEASURED FROM PIN 7 OF V7.
▲ TAKEN WITH VACUUM TUBE VOLTMETER.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

BENDIX
MODELS FM27C, HB27C (Ch. T14-3)

PROPERTY OF
L. F. BLANKENSHIP
3944 MEADE ST.
DENVER, COLORADO

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The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

MODEL FM27C

BENDIX
MODELS FM27C, HB27C (Ch. T14-3)

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DATE 9-53 SET 215 FOLDER 3

PROPERTY OF
L. F. BLANKENSHIP

BENDIX
MODELS FM27C, HB27C (Ch. T14-3)

BENDIX MODEL FM27C

TRADE NAME	Bendix Models FM27C, HB27C (Ch. T14-3), TB24DS, TM24DS (Ch. T14-10), TB24DU, TM24DU (Ch. T14-11)
MANUFACTURER	Bendix Radio, Div. of Bendix Aviation Corp., Baltimore, Md.
TYPE SET	Television Receiver
TUBES	Twenty-eight
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 2.3 Amp. @ 117 Volts AC
TUNING RANGE—	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

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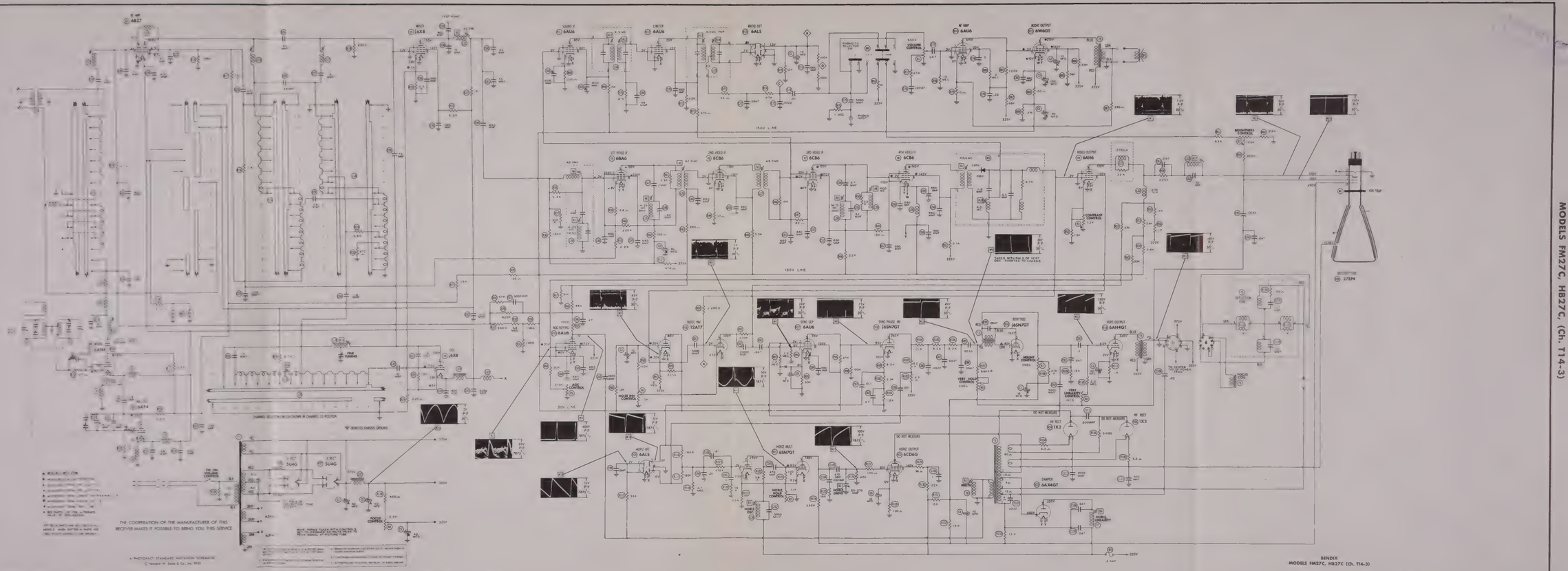
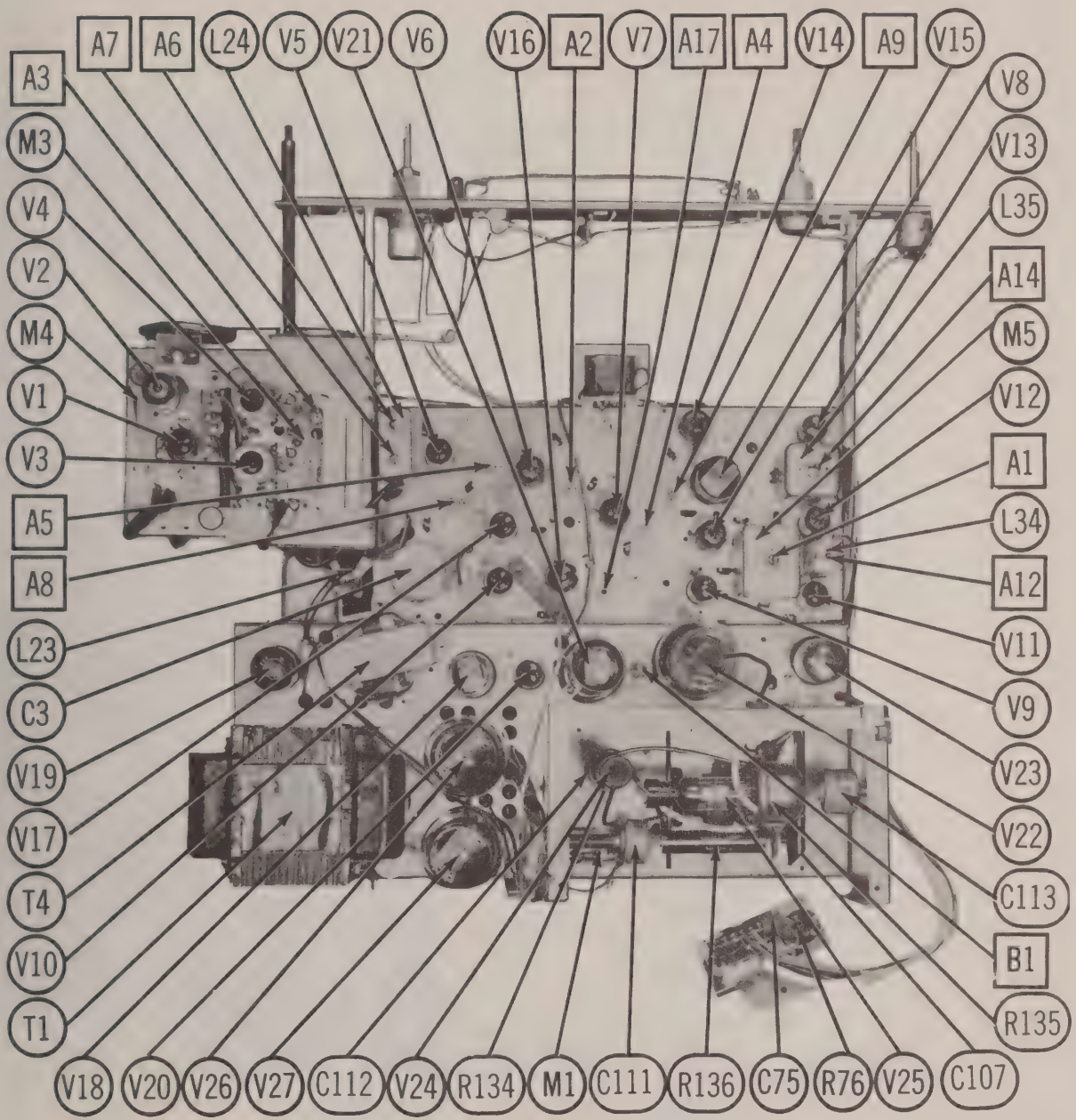
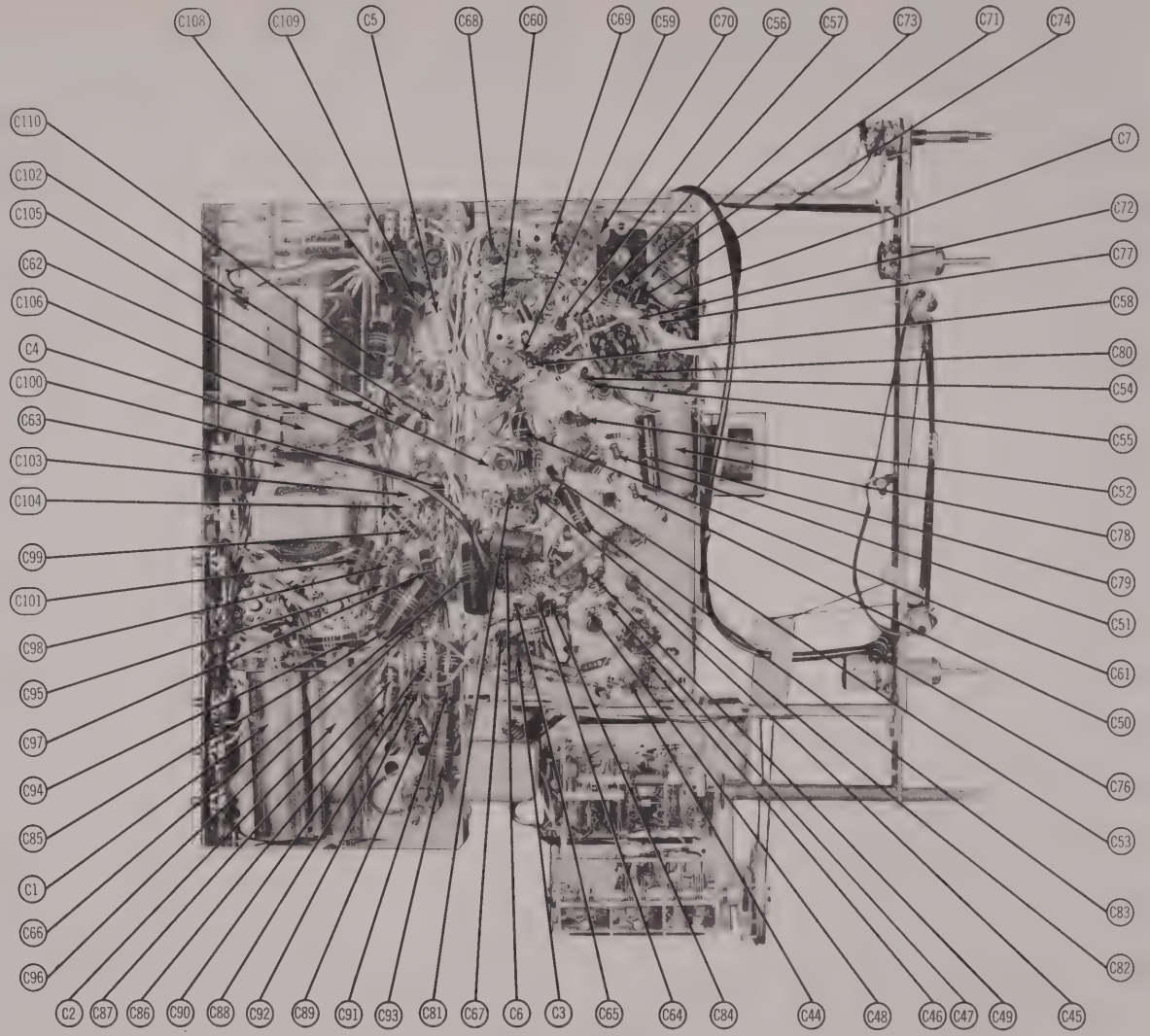

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
A PHOTOFACT STANDARD NOTATION SCHEMATIC
BENDIX
MODELS FM27C, H827C (Ch. T14-3)

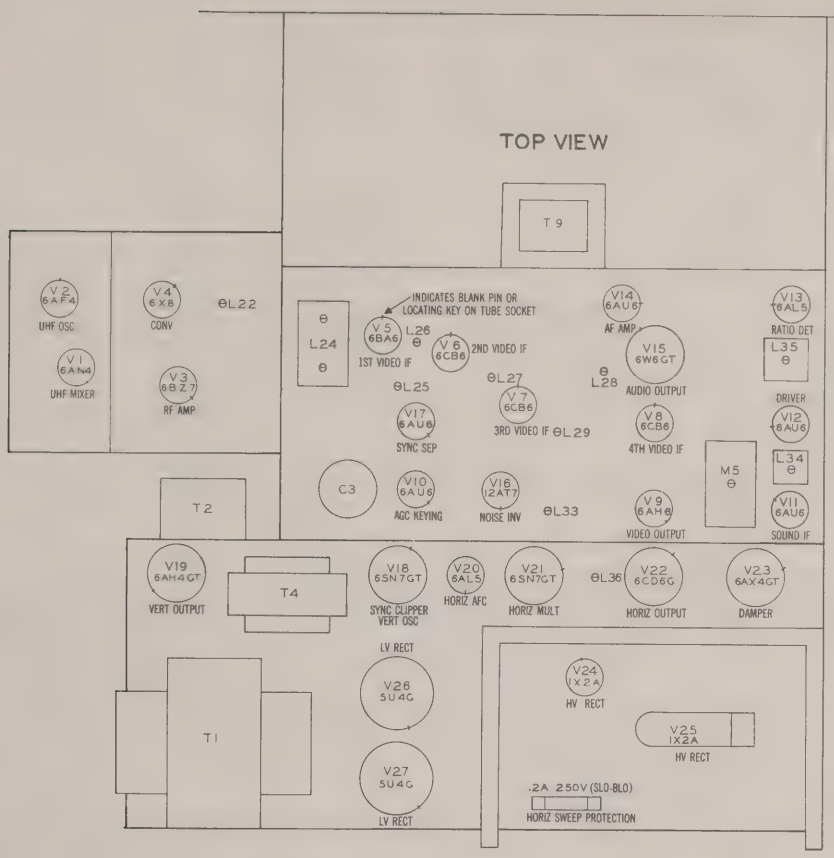


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V26, V27

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V4, V5, V6, V7, V8, V15 (V1, V2 UHF only)
No pic, no sound, has snow - V3, V4, V5
No pic, has sound, has raster - V9, V28
Has pic, no sound - V11, V12, V13, V14, V15
Overloaded picture - V10

SYNC FAILURE
No vert. sync - V18
No horiz. sync - V18, V20, V21
No vert. or horiz. sync - V17, V18

SWEEP FAILURE
No raster, has sound - V21, V22, V23, V24, V25, V28, Fuse (M1)
No vertical deflection - V18, V19
Poor vert. linearity or foldover - V18, V19
Poor horiz. linearity or foldover - V21, V22, V23
Narrow picture - V21, V22, V23, V24, V25, V26, V27
Vert. off freq. - V18
Horiz. off freq. - V18, V20, V21

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal multivibrator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the AGC amplifier tube, V10, from its socket. Connect the negative lead of a 3 volt battery to the IF AGC test point. Connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over converter tube (V4). Low side to chassis.	45.0MC	Any non-interfering channel	DC probe to point (A). Common to chassis.	A1, A2 A3	Adjust for maximum deflection.
2.	"	"	42.0MC	"	"	A4, A5, A6	"
3.	"	"	41.25MC	"	"	A7, A8	Adjust for MINIMUM deflection.
4.	"	"	39.75MC	"	"	A9	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizonal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	Direct	High side to an ungrounded tube shield floating over converter tube. Low side to chassis.	43MC (10MC Swp)	41.25MC 45.75MC	Any non-interfering Channel	Vert. amp. thru 47KΩ to pin 1 (grid) of 6AH6 (V9). Low side to chassis.		Check for response curve similar to Fig. 1. If necessary retouch A1 through A6 for desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ(±1%) resistors in series from point (B) to chassis. The junction of these two resistors is alignment point (D) as shown on the schematic.
Increase the bias as used under Video IF alignment to -9 volts.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	Direct	High side to point (A). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel.	DC probe to point (B). Common to chassis.	A10, A11, A12, A13	Adjust for maximum deflection. Attenuate generator to maintain not nore than 1.5 Volts at VTVM.
7.	"	"	"	"	DC probe to point (C). Common to point (D).	A14	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.
Increase the bias as used under Video IF alignment to -9 volts.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Direct	High side to point (A). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any non-interfering channel.	Vert. amp to point (B) Low side to chassis.	A10, A11, A12, A13	Disconnect stabilizer capacitor C7. Adjust for curve of maximum amplitude and symmetry as in Fig. 2. Attenuate generator to maintain approximately 1.5 Volts peak on scope.
7.	"	"	"	"	"	Vert. amp to point (C) Low side to chassis.	A14	Reconnect capacitor C7. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 3. SLIGHTLY retouch A13 for maximum amplitude and straightness of crossover lines

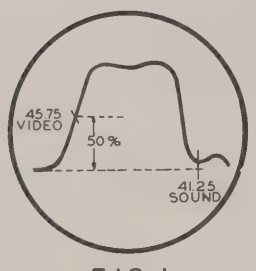


FIG. 1

FIG. 2

ALIGNMENT INSTRUCTIONS (CONT.)

PROPERTY OF
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3524 L... ST.
DENVER, COLORADO

OSCILLATOR ALIGNMENT

Connect 3 volt bias battery as under video IF alignment.
V10 should remain out of its socket.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. thru 47KΩ to pin 1 (grid) of 6AH6 (V9). Low side to chassis.	A15	Adjust to place sound marker in trap notch as in Fig. 4. Video marker should be at 50%.
9.	"	"	207MC (10MC Swp)	205.25MC 209.75MC	12	"		Check high band channels for sound marker placement as in Fig. 4. If necessary make slight compromise adjustment of A15 for best marker placement on all channels.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
10.	"	"	85MC (10MC Swp)	83.25MC 87.75MC	6	"	A16	Adjust to place sound marker in trap notch as in Fig. 4. Video marker should be at 50%.
11.	"	"	79MC (10MC Swp)	77.25MC 81.75MC	5	"		Check low band channels for sound marker placement as in Fig. 4. If necessary, make slight compromise adjustment of A16 for best marker placement on all channels.
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

RF ALIGNMENT AND UHF TUNER ALIGNMENT

These portions of the receiver have been properly aligned at the factory and are very stable. Alignment of these portions should not be required in the field.

4.5MC TRAP ADJUSTMENT

Tune in a TV station and examine the picture for evidence of 4.5MC beat interference. If any is noted adjust A17 to point of minimum interference.

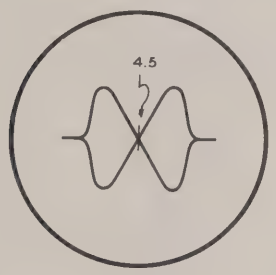


FIG. 3

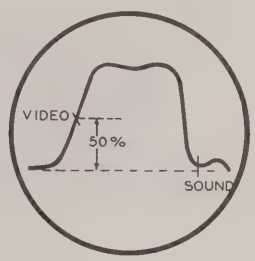
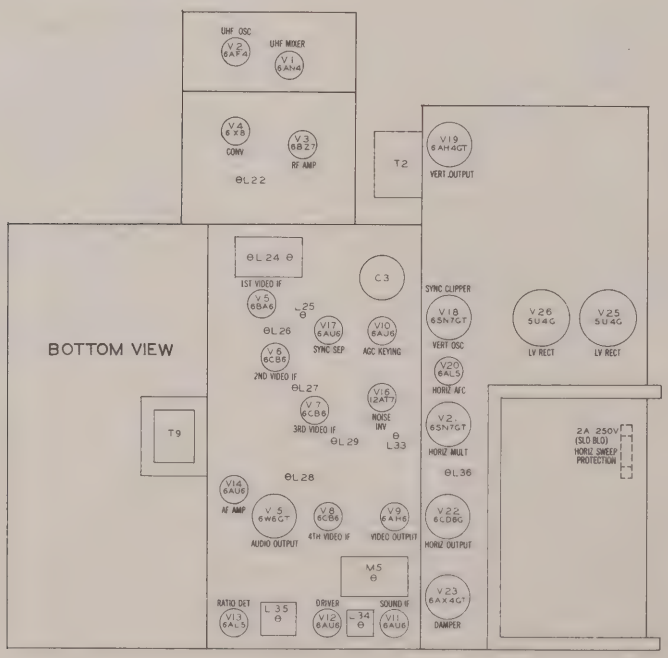


FIG. 4

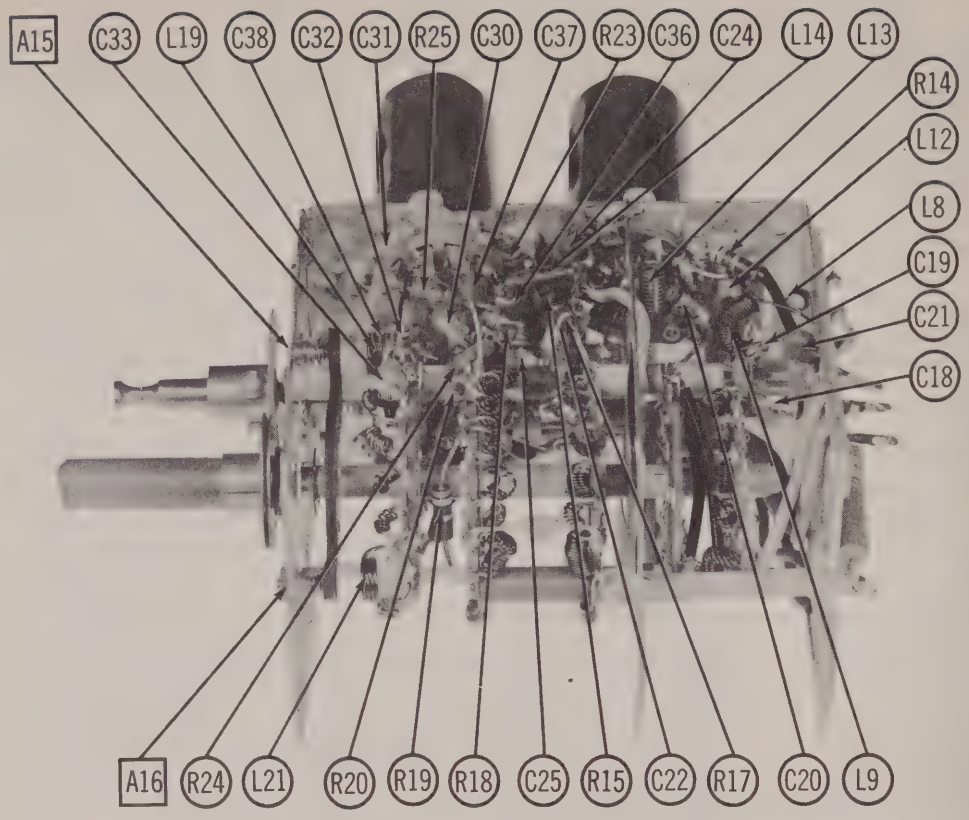
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AN4	‡21KΩ	0Ω	.1Ω	0Ω	270Ω	0Ω	‡21KΩ		
V 2	6AF4	‡20KΩ	15KΩ	.1Ω	0Ω	0Ω	15KΩ	‡20KΩ		
V 3	6BZ7	#3.3KΩ	#480KΩ	INF	.1Ω	0Ω	INF	640KΩ	0Ω	0Ω
V 4	6X8	0Ω	15KΩ ¶17KΩ	‡5KΩ	0Ω	.1Ω	200Ω ¶2.2KΩ	220KΩ	‡2.5KΩ	‡1.3KΩ
V 5	6BA6	†115KΩ	#0Ω	‡1Ω	‡0Ω	†570Ω	†570Ω	#68Ω		
V 6	6CB6	51KΩ	47Ω	0Ω	.1Ω	‡3.3KΩ	‡3.3KΩ	0Ω		
V 7	6CB6	2.7KΩ	2.8KΩ	.1Ω	0Ω	‡22KΩ	‡22KΩ	2.7KΩ		
V 8	6CB6	♦150Ω	‡22KΩ	‡.1Ω	‡0Ω	†3.2KΩ	†3.2KΩ	♦0Ω		
V 9	6AH6	4.7KΩ	0Ω	0Ω	.1Ω	‡6.8KΩ	■0Ω	55Ω		
V 10	6AU6	‡35KΩ	‡0Ω	‡0Ω	‡.1Ω	270KΩ	†320Ω	‡0Ω		
V 11	6AU6	2.4Ω	0Ω	0Ω	.1Ω	‡15KΩ	‡15KΩ	220Ω		
V 12	6AU6	47KΩ	0Ω	0Ω	.1Ω	■550Ω	■550Ω	0Ω		
V 13	6AL5	INF	INF	0Ω	.1Ω	0Ω	0Ω	12KΩ		
V 14	6AU6	10Meg	0Ω	0Ω	.1Ω	†290KΩ	†1.3Meg	10Ω		
V 15	6W6GT	†68KΩ	‡0Ω	†290Ω	†4KΩ	†290KΩ	†490Ω	‡.1Ω	27KΩ	
V 16	12AT7	‡0Ω	‡12KΩ	‡175KΩ	0Ω	0Ω	‡520KΩ	2.2Meg	3.8KΩ	.1Ω
V 17	6AU6	2.2Meg	2.2Meg	0Ω	.1Ω	‡47KΩ	‡0Ω	33KΩ		
V 18	6SN7GT	2.6Meg	††1.6Meg	0Ω	‡47KΩ	†13.5KΩ	23KΩ	0Ω	.1Ω	
V 19	6AH4GT	3.3Meg	0Ω	1.1Meg	0Ω	†825Ω	INF	.1Ω	1KΩ	
V 20	6AL5	33KΩ	33KΩ	0Ω	.1Ω	4.9Meg	0Ω	4.9Meg		
V 21	6SN7GT	5.2Meg	†5.9KΩ	1.5KΩ	115KΩ	††345KΩ	1.5KΩ	.1Ω	0Ω	
V 22	6CD6G	100Ω	.1Ω	100Ω	†22KΩ	1 Meg	1 Meg	0Ω	†23KΩ	Top Cap ††10Ω
V 23	6AX4GT	INF	INF	65KΩ	INF	†340Ω	†55KΩ	‡.1Ω	‡0Ω	
V 24	1X2	PINS 1 - 9 HAVE INF RESISTANCE								Top Cap ††90Ω
V 25	1X2	PINS 1 - 9 HAVE INF RESISTANCE								Top Cap ††INF
V 26	5U4G	INF	22KΩ	INF	19Ω	†125Ω	18Ω	†340Ω	22KΩ	
V 27	5U4G	†135Ω	22KΩ	0Ω	19Ω	220KΩ	18Ω	‡12KΩ	22KΩ	
V 28	27EP4	0Ω	320KΩ	Pin 10 ††15KΩ	Pin 11 ‡220KΩ	Pin 12 .1Ω				

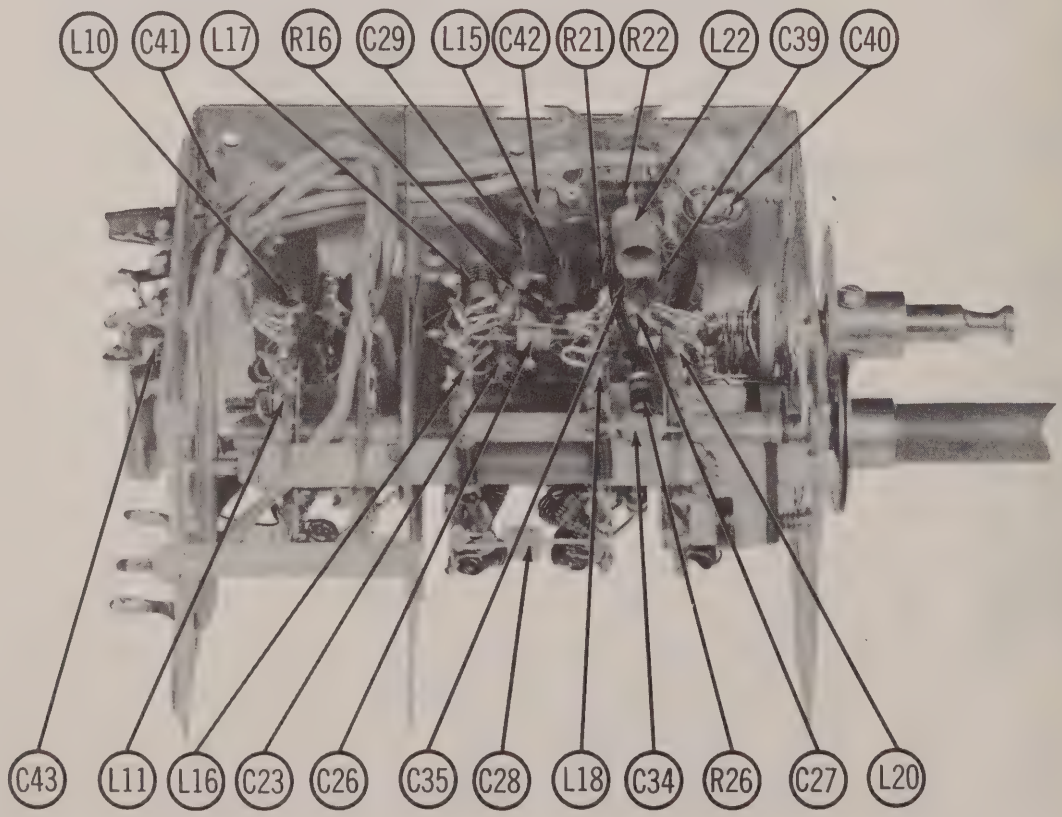
ALL MEASUREMENTS TAKEN IN "VHF" POSITION UNLESS OTHER WISE SPECIFIED.
¶ MEASURED IN "UHF" POSITION .
¶ MEASURED FROM PIN 8 OF V27.
‡ MEASURED FROM 150VDC LINE
# MEASURED FROM JUNCTION OF R35 AND R40.
▲ MEASURED FROM PIN 2 OF V7.
♦ MEASURED FROM PIN 2 OF V8.
■ MEASURED FROM PIN 3 OF V16.
†† MEASURED FROM PIN 3 OF V23.



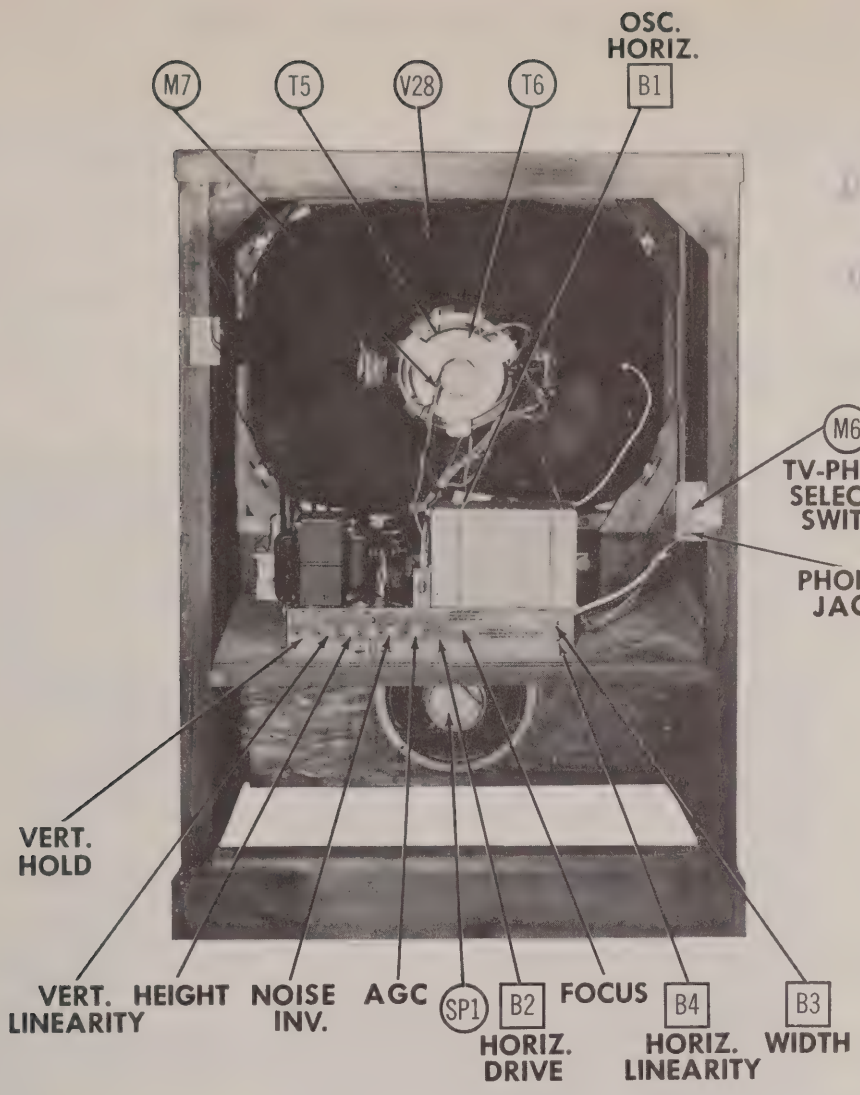
TUBE PLACEMENT CHART



VHF TUNER - RIGHT SIDE



VHF TUNER - LEFT SIDE



CABINET–REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Set the horizontal hold control at the middle of its range.

Set the contrast control for normal operation.

Adjust the horizontal oscillator slug (B1) until the picture synchronizes horizontally.

Turn the horizontal hold control to each extreme end of its rotation to see that the sync range is centered.

If necessary, slight readjustment of B1 should give the desired effect.

Set the channel selector switch to a point between any two channels.

Set the contrast control fully counter clockwise.

Connect the DC probe of a VTVM to pin 3 (cathode) of 6CD6GT (V22). Connect the common lead to chassis.

Turn the horizontal drive trimmer (B2) clockwise, not allowing the voltage on VTVM to exceed 15 volts. (On some sets this much voltage may not be obtained).

The correct adjustment of B2 may then be reached by turning B2 counter clockwise while observing the VTVM reading. There will be a rapid voltage drop of approximately $1\frac{1}{2}$ to 3 volts to a point where further rotation of B2 will cause only a slight decrease in voltage reading. This point is the proper setting of B2.

Adjust the width slug (B3) for a picture slightly wider than necessary to fill the picture mask horizontally. Adjust the horizontal linearity slug (B4) for a picture that is symmetrical from left to right.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1	UHF Mixer	6AN4	6AN4	7DK	
V2	UHF Oscillator	6AF4	6AF4	7DK	
V3	RF Amplifier	6BZ7	6BZ7	9AJ	
V4	Converter	6X8	6X8	9AK	
V5	1st. Video IF Amp.	6BA6	6BA6	7BK	
V6	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V7	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V8	4th. Video IF Amp.	6CB6	6CB6	7CM	
V9	Video Output	6AH6	6AH6	7HK	
V10	AGC Keying	6AU6	6AU6	7BK	
V11	Sound IF Amp.	6AU6	6AU6	7BK	
V12	Limiter	6AU6	6AU6	7BK	
V13	Ratio Detector	6AL5	6AL5	6BT	
V14	AF Amplifier	6AU6	6AU6	7BK	
V15	Audio Output	6W6GT	6W6GT	7S	
V16	Noise Inverter	12AT7	12AT7	9A	
V17	Sync Separator	6AU8	6AU6	7BK	
V18	Sync Phase Inv. – Vert. Oscillator	6SN7GT	6SN7GT	8BD	
V19	Vert. Output	6AH4GT	6AH4GT	8EL	
V20	Horiz. AFC	6AL5	6AL5	6BT	
V21	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V22	Horiz. Output	6CD6GT	6CD6GT	5BT	
V23	Damper	6AX4GT	6AX4GT	4CG	
V24	HV Rectifier	1X2	1X2	9Y	
V25	HV Rectifier	1X2	1X2	9Y	
V26	LV Rectifier	5U4G	5U4G	5T	
V27	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA: SYLVANIA TYPE	RTMA BASE TYPE	NOTES
V28A	27EP4	27GP4	12D	Models FM27C, HB27C
B	24CP4		12C	Models TB24DS, TM24DS, TB24DU, TM24DU

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: BENDIX PART No.	AEROVOX PART No.	CENTRALAB DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	≠80	450	267005-8	AFH3-46		CO37	FP378	TVL-3793	
B	≠40	450							
C	≠10	450							
C2A	≠80	450	267005-8	AFH3-46		CO37	FP378	TVL-3792	
B	≠80	450							
C	≠10	450							
C3A	200	200	267005-10	AFH4-41		DO36	FP423.4	TVL-4516	
B	≠40	200							
C	≠10	200							
D	100	50							
C4	10	200	267024-14	PRS350/10		BR1225A		TC52	TVA-1504
C5	10	50	267024-16	BR105		BR105		TC32	TVA-1304
C6	2	50	267024-17	PRS150/4		BBR-2-50T		TC302	TVA-1301
C7	10	50	267024-16	PRS50/10		BR105		TC32	TVA-1304
C8	220			SI220	D6-221		GP2K-221	UC-5322	5GA-T22
C9	1.2			SIL.2NP0	TCZ-1.2		NP0K-1R2		5TCCB-V12
C10	2								
C11	6-1.2								
C12	1.5								
C13	.68			SI.68NP0	TCZ-.68		NP0K-R68		5TCCB-V68
C14	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1
C15	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1
C16	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1
C17	87								
C18	22			SI22NP0	TCZ-22		NP0K-220	NT-5422	5TCCB-Q22
C19	15			SIJ5	D6-150		GP1K-150	UC-5415	5GA-Q15
C20	3			SI3NP0	TCZ-3.3		NP0K-030		5TCCB-V33
C21	900			BPD-0008	DD-801	TM5D1	801-001	DC-521	5HK-D1
C22	470			SI470	D6-471		GP2K-471	UC-5347	5GA-T47
C23	470			SI470	D6-471		GP2K-471	UC-5347	5GA-T47
C24	900			BPD-0008	DD-801	TM5T1	801-001	DC-521	5HK-D1
C25	.33								
C26	.36								
C27	15			SIJ5	D6-150		GP1K-150	UC-5415	5GA-Q15
C28	1.6								
C29	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1
C30	.75								
C31	1.5								
C32	10								
C33	1.5			SIL.5NP0	TCZ-1.5		NP0K-1R5	NT-5515	5TCCB-V15
C34	1.6								
C35	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1
C36	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1
C37	900			BPD-0008	DD-801	TM5D1	801-001	DC-521	5HK-D1
C38	10			SI10NP0	TCZ-10		NP0K-100	NT-541	5TCC-Q1
C39	800			BPD-0008	DD-801	TM5D1	801-001	DC-521	5HK-D1
C40	82								
C41	7.5								
C42	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1
C43	5000		267037-502	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5
C44	680		267032-9	SI680	D6-681		GP2K-681	UC-5368	5GA-T68
C45	680		267032-9	SI680	D6-681		GP2K-681	UC-5368	5GA-T68
C46	680		267032-9	SI680	D6-681		GP2K-681	UC-5368	5GA-T68
C47	2								
C48	82	500							
C49	680		267032-9	SI680	D6-681		GP2K-681	UC-5368	5GA-T68
C50	680		267032-9	SI680	D6-681		GP2K-681	UC-5368	5GA-T68
C51	680		267032-9	SI680	D6-681		GP2K-681	UC-5368	5GA-T68
C52	680		267032-9	SI680	D6-681		GP2K-681	UC-5368	5GA-T68
C53	680		267032-9	SI680	D6-681		GP2K-681	UC-5368	5GA-T68
C54	4.7			SI4.7NP0	TCZ-4.7		NP0K-4R7	NT-555	5TCCB-V47

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: BENDIX PART No.	AEROVOX PART No.	CENTRALAB DUBILIER PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C55	62	500								
C56	680			267032-9	SI680	D6-681		GP2K-681	UC-5368	5GA-T68
C57	680			267032-9	SI680	D6-681		GP2K-681	UC-5368	5GA-T68
C58	680			267032-9	SI680	D6-681		GP2K-681	UC-5368	5GA-T68
C59	680			267032-9	SI080	D6-681		GP2K-681	UC-5368	5GA-T68
C60	680			267032-9	SI680	D6-681		GP2K-681	UC-5368	5GA-T68
C61	.047	200		267056-473	P288-047	DF-503	PTE4S47		PT4147	2TM-S47
C62	82	500								
C63	1000	500			1467-001	D6-102	1W5D1	GP2L-102	MC255	1FM-21
C64	680			267032-9	SI680	D6-681		GP2K-681	UC-5368	5GA-T68
C65	680			267032-9	SI680	D6-681		GP2K-681	UC-5368	5GA-T68
C66	.47	200		267036-472	P288-22		PTE4P47		PT405	2TM-P47
C67	5000			267037-502	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5
C68A	4000			267052-402	BPD-2X004	D6-402	TM5DD4	GP2-333-402)	DCD-524	5HK-2D4
B	4000					D6-402		(GP2-333-402)		
C69	68			267032-37	SI68	D6-680		GP1K-680	UC-5468	5GA-Q68
C70	3000			267064-302	SD3000	D6-302		GP2-323-302	UC-553	5HK-D3
C71	1000			267032-17	SIJ000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1
C72	.0027	600		267059-272						
C73	.0022	400		267036-222	P288-0022	D6-222	PTE6D22	GP2-333-222	PT6022	6TM-D22
C74	.01	400		267036-103	P488-01	D6-103	PTE4S1	GP2-333-103	PT4U	4TM-S1
C75	5000			267037-502	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5
C76	.0047	400		267036-472	P288-0047	D6-472	PTE4D47	GP2-333-472	PT4247	4TM-D47
C77	.047	200		267056-473	P288-047		PTE4S47		PT4147	2TM-S47
C78	.5	400		267036-474	P488-5		PTE405		PT405	4TM-P5
C79	.22	400		267036-224	P488-22		PTE4P22		PT4022	4TM-P22
C80	680			267032-9	SI680	D6-681		GP2K-681	UC-5368	5GA-T68
C81	5000			267037-502	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5
C82	20000			267037-203	BPD-02	DD-203	TM5S5			5HK-S2
C83	.047	200		267056-473	P288-047	DF-503	PTE4S47		PT4147	2TM-S47
C84	680			267032-9	SI680	D6-681		GP2K-681	UC-5368	5GA-T68
C85	.47	200		267036-474	P288-47		PTE4P47		PT405	2TM-P47
C86	.0022	600		267060-222	P688-0022	D6-222	PTE6D22	GP2-333-222	PT6222	6TM-D22
C87	.0047	600		267060-472	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47
C88	.0047	600		267060-472	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47
C89	.0033	600		267060-332	P688-0033	D6-332	PTE6D33	GP2-333-332	PT6233	6TM-D33
C90	.0047	600		267060-472	P688-0047	D6-472	PTE5D47	GP2-333-472	PT6247	6TM-D47
C91	.047	500		267055-473	P588-047	DF-503	PTE6S47		PT6147	6TM-S47
C92	5000			267037-502	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5
C93	.1	600		267055-104	P588-1	DF-104	PTE6P1		PT601	6TM-P1
C94	.047	200		267058-104	P288-047	DF-503	PTE6S47		PT4147	2TM-S47
C95	.0033	400		267036-332	P688-0033	D6-332	PTE6D33	GP2-333-332	PT6233	6TM-D33
C96	.001	400		267036-102	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1
C97	.001	400		267036-102	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1
C98	.0047	400		267059-472	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47
C99	.01	400		267059-103	P488-01	D6-103	PTE4S1	GP2-333-103	PT4U	4TM-S1
C100	.01	400		267059-103	P488-01	D6-103	PTE4S1	GP2-333-103	PT4U	4TM-S1
C101	.1	200		267058-104	P288-1	DF-104	PTE2P1		PT201	2TM-P1
C102	3900	500		CM243792K	1464-004		1DR5D4		MCB463	MS-24
C103	470	500		CM224A471K	1469-0005		5R5T5		MCB445	MS-35
C104	330	500		CM22A331K	1465-00035					
C105	470			267032-39	SI470	D6-471		GP2K-471	UC-5347	5GA-T47
C106	.1	600		267055-104	P588-1	DF-104	PTE6P1		PT601	6TM-P1
C107	.0033	600		267060-332	P688-0033	D6-332	PTE6D33	GP2-333-332	PT6233	6TM-D33
C108	.22	400		267059-224	P488-22		PTE4P22		PT4022	4TM-P22
C109	.047	600		267055-473	P588-047		PTE6S47		PT6147	6TM-S47
C110	.047	600		2r7059-473	P688-0047		PTE5S47		PT6147	6TM-S47
C111	500	10000		267061-1	HV10C	TV3-502	MM-C10T5	413-501	HV20035A	5DK-T5
C112	500	10000		267061-1	HV10C	TV3-502	MM-C10T5	413-501	HV20035A	5DK-T5
C113	500	20000		267063-1	HV20C	TV3-502	MM-C20T5	413-501	HV20035A	5DK-T5
C114	110	2000								
C115	219	2000								

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BENDIX PART No.	IRC PART No	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No	INSTALLATION NOTES
R1A	500KΩ	1	CR262041-2	Q19-133X	AT-90	BT-65-S	UT-431	Volume Tap@ 300KΩ
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	Q8-1	SW-A	Not Req.	US-26	Attach to R1A
R2A	30KΩ	½	CH262022-4	Q11-121	AG-42-S	B-26	U-35	Horiz. Hold
B	Shaft		Not Req.	Not Req.	FKS-1/4	Not Req.	Not Req.	Attach to R2A
R3A	100KΩ	½	LH262046-1	QJ-3879	RTV-373		UF15L	Brightness-Panel
B	1200Ω	½					UR16L	Contrast-Rear
R4A	2500Ω	4	CH262023-9	4WS-2500	A10-2500	SVP-988	TVF143	Focus-Wire Wound
B	Shaft		Not Req.	Not Req.	FKS-1/4	Not Req.	Not Req.	Attach to R4A
R5A	250KΩ	½	CH262025-16	Q11-130	AG-55-S	SU-48	AGC	
B	Shaft		Not Req.	RQ	FKS-1/4	AK-1	Not Req.	Attach to R5A
R6A	10KΩ	½	OCH262025-15	QU-116	AG-27-S	AB-14	SU-20	Noise Inverter
B	Shaft		Not Req.	RQ	FKS-1/4	AK-1	Not Req.	Attach to R6A
R7A	3 Meg	½	OCH262025-12	QU-140	AG-84-S	AB-84	SU-59	Height
B	Shaft		Not Req.	RQ	FKS-1/4	AK-1	Not Req.	Attach to R7A
R8A	1 Meg	½	OCH262025-19	QU-137	AG-81-S	AB-69	SU-54	Vert. Linearity
B	Shaft		Not Req.	RQ	FKS-1/4	AK-1	Not Req.	Attach to R8A
R9A	5 Meg	½	OCH262025-12	QU-140	AG-84-S	AB-84	SU-59	Vert. Hold - Note
B	Shaft		Not Req.	RQ	FKS-1/4	AK-1	Not Req.	Attach to R9A

Note . Some models may use alternate control (Part No. OCH262025-14)
* CONCENTRIKIT EQUIVALENT-KIT K-2, BASE ELEMENTS & SHAFTS Bil-128 & Pi-123 (Panel)
Bi7-208 & Ri-209 (Rear).

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: BENDIX PART No.	IRC PART No	NOTES
R10	270Ω	½		BTS-270	
R11	3300Ω	½		BTS-3300	
R12	15KΩ	½		BTS-15K	
R13	2200Ω	1		BTA-2200	
R14	4700Ω	½		BTS-4700	
R15	1 Meg-5%	½			
R16	1000Ω	½		BTS-1000	
R17	720KΩ-5%	½			
R18	220KΩ	½		BTS-220K	
R19	3900Ω	½		BTS-3900	
R20	470Ω	½		BTS-470	
R21	2200Ω	½		BTS-2200	
R22	1000Ω	½		BTS-1000	
R23	2200Ω	½		BTS-2200	
R24	220Ω	½		BTS-220	
R25	15KΩ	½		BTS-15K	
R26	4700Ω	½		BTS-4700	
R27	18KΩ	½	RC25A183K	BTB-18K	
R28	150Ω	½	RC25A151K	BTS-150	
R29	620KΩ-5%	½	RC23A624J	BTS-620K-5%	

RESISTORS (CONT.)

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: ENDIX PART No.	IRC PART No	NOTES
R30	1 Meg-5%	½	RC23A105J	BTS-1 Meg-5%	
R31	1 Meg-5%	½	RC23A105J	BTS-1 Meg-5%	
R32	3.9Meg-5%	½	RC23A395J	BTS-3.9Meg-5%	
R33	680KΩ	½	RC23A684K	BTS-680K	
R34	47KΩ	½	RC23A473K	BTS-47K	
R35	2200Ω	1	RC24A222K	BTA-2200	
R36	180KΩ	½	RC23A184K	BTS-180K	
R37	330KΩ	½	RC23A334J	BTS-330K	
R38	3300Ω 5%	½	RC23A332J	BTS-3300 5%	
R39	680 5%	½	RC23A681J	BTS-68 5%	
R40	220K	½	RC23A224K	BTS-220K	
R41	3300Ω	½	RC23A332J	BTS-3300	
R42	1000	½	RC23A102K	BTS-100	
R43	680Ω	½	RC23A681K	BTS-680	
R44	470 5%	½	RC23A470K	BTS-47 5%	
R45	3300Ω	2	RC25A332K	BTB-3300	
R46	10KΩ 5%	½	RC23A103J		
R47	82Ω	½	RC23A820K	BTS-82	
R48	22KΩ	½	RC23A223K	BTS-22K	
R49	150Ω	½	RC23A151K	BTS-150	
R50	3300Ω 5%	½	RC23A332J	BTS-3300 5%	
R51	2700Ω	1	RC24A272K	BTA-2700	
R52	15000Ω	½	RC23A153K	BTS-15000	
R53	3600Ω 5%	½	RC23A362J	BTS-3600 5%	
R54	3600Ω 5%	2	RC25A362J	BTS-3600 5%	
R55	11KΩ 5%	2	RC25A113J	BTB-11K 5%	
R56	11KΩ 5%	2	RC25A113J	BTB-11K 5%	
R57	47KΩ	½	RC23A473K	BTS-47K	
R58	220KΩ	½	RC23A224K	BTS-220K	
R59	300KΩ 5%	½		BTS-300K 5%	
R60	33KΩ	½	RC23A333K	BTS-33K	
R61	82KΩ	½	RC23A823K	BTS-82K	
R62	1000Ω	½	RC23A102M	BTS-1000	
R63	33KΩ	½	RC23A333K	BTS-33K	
R64	180KΩ	½	RC23A184K	BTS-180K	
R65	150KΩ	½	RC23A154K	BTS-150K	
R66	68KΩ 5%	½	RC23A683J	BTS-68K 5%	
R67	5KΩ 5%	½	RC23A502J	BTS-5K 5%	
R68	220Ω	½	RC23A221K	BTS-220	
R69	15KΩ	½	RC23A153K		
R70	47KΩ	½	RC23A473K		
R71	470Ω	½	RC23A471K	BTS-470	
R72	2200Ω	½	RC23A222K	BTS-2200	
R73	33Ω	½	RC23A330K	BTS-33	
R74	47KΩ	½	RC23A473K	BTS-47K	
R75	12KΩ	½	RC23A123K	BTS-12K	
R76	1Meg	½	RC23A105M	BTS-1Meg	
R77	47KΩ	½	RC23A473K	BTS-47K	
R78	10Ω	½	RC23A100K	BTS-10Meg	
R79	10Ω	½	RC23A100K	BTS-10	
R80	1.2Meg 5%	½	RC23A125J	BTS-1.2Meg 5%	
R81	220KΩ 5%	½	RC23A224J	BTS-220K 5%	
R82	68KΩ	½	RC23A683K	BTS-68K	
R83	150Ω	1	RC24A151M	BTA-150	
R84	27KΩ	2	RC25A273K	BTB-27K	

RESISTORS (CONT.)

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: BENDIX PART No.	IRC PART No	NOTES
R85	56KΩ	2	RC25A563K	BTB-56K	
R86	3900Ω	1	RC24A392K	BTA-3900	
R87	390Ω	1	RC23A391K	BTS-390	
R88	12KΩ	½	RC23A123K	BTS-12K	
R89	220KΩ	½	RC23A224K	BTS-220K	
R90	100KΩ	½	RC23A104K	BTS-100K	
R91	1.2Meg 5%	½	RC23A125J	BTS-1.2Meg 5%	
R92	470KΩ	½	RC23A474K	BTS-470K	
R93	2.2Meg	½	RC23A225K	BTS-2.2Meg	
R94	2.2Meg	½	RC23A225K	BTS-2.2Meg	
R95	33KΩ	½	RC23A333K	BTS-33K	
R96	47KΩ	½	RC23A473K	BTS-47K	
R97	2.2Meg	½	RC23A225K	BTS-2.2Meg	
R98	100KΩ	½	RC23A104K	BTS-100K	
R99	8200Ω	½	RC23A822K	BTS-8200	
R100	3300Ω	½	RC23A332J	BTS-3300	
R101	12KΩ	½	RC23A123K	BTS-12K	
R102	8200Ω	½	RC23A822K	BTS-8200	
R103	4700Ω	½	RC23A472K	BTS-4700	
R104	22KΩ	½	RC23A223K	BTS-22K	
R105	8200Ω	½	RC23A822K	BTS-8200	
R106	8200Ω	½	RC23A822K	BTS-8200	
R107	680KΩ	½	RC23A684K	BTS-680K	Note
R108	470KΩ	½	RC23A474K	BTS-470K	
R109	12KΩ 5%	½	RC23A123J	BTS-12K 5%	
R110	2.2Meg	½	RC23A225K	BTS-2.2Meg	
R111	1000Ω	1	RC24A102K	BTA-1000	
R112	1000Ω	2		BTB-1000	
R113	1000Ω	1		BTS-1000	
R114	150Ω	1		BTS-150	
R115	33KΩ	1	RC24A333K	BTA-33K	
R116	180KΩ	½	RC23A184K	BTS-180K	
R117	180KΩ	½	RC23A184K	BTS-180K	
R118	4.7Meg	½	RC23A475M	BTS-4.7Meg	
R119	470KΩ	½	RC23A474K	BTS-470K	
R120	39KΩ	½	RC23A393K	BTS-39K	
R121	1500Ω	2	RC25A152K	BTB-1500	
R122	5600Ω	½	RC24A562K	BTA-5600	
R123	100KΩ	½	RC23A104K	BTS-100K	
R124	330KΩ	½	RC23A334K	BTS-330K	
R125	18KΩ	½	RC23A183K	BTS-18K	
R126	1Meg	½	RC23A105M	BTS-1Meg	
R127	100Ω	½	RC23A101K		
R128	100Ω	2	RC25A101M	BW-2-100	
R129	56Ω	1	RC23A560K		
R130	22KΩ	2	RC25A223K	BTB-22K	
R131	15KΩ	½	RC23A153K	BTS-15K	
R132	15KΩ	1	RC24A153K	BTA-15K	
R133	15KΩ	2	RC25A153K	BTB-15K	
R134	3.3Ω	2	268000-033		
R135	3.3Ω	1	268000-033		
R136	5Meg	3	268514-1		
R137	470Ω	2	RC25A471K	BTS-470	
R138	600Ω	5	268016-5	1 3/4A-600	
R139	220KΩ	1	RC24A224K	BTA-220K	
R140	2.2Ω	1	268000-022		

Note : Some Models may use a 1.2Meg resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: BENDIX PART No.	STANCOR PART No.	MERIT PART No	CHICAGO PART No	TRIAD PART No	RCA TYPE No.
T1	117VAC @2.3A	725VCT .200ADC	5VAC @6A	6.3VAC @1.2A	265048-2			265047-3 ①		
				SEC. 4 6.3VAC @ 9.0 A						

① Alternate transformer

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: BENDIX PART No.	STANCOR PART No.	MERIT PART No	CHICAGO PART No.	TRIAD PART No	RCA TYPE No.	NOTES
T2	170Ω	90Ω	265054-2	A-8121	A-4000	TBO-1	A-97K	20BT2	Vert.Osc.Trans. Horiz.Output Trans.
T3	110Ωtap @40, 160, 20Ω	3.5Ω SEC. 2 0Ω	265075-1						
	30Ω	SEC. 3 0Ω							
T4	670Ω	9Ω	265089-1	A-8113	A-3039 MDP-90	TSO-5	A-99X	20HT2⑤ 21HD1	Vert.Output Trans. Horiz.Deflection Coils
T5A	15Ω		265074-1						Vert. Deflection Coils
B	48Ω								
T6	490Ω		265045-9		FC-11 ①	MF-2 ① MWC-6	TC-2 ②	B-470 ① WC-12 ③	213R1	Focus Coil Horiz.Linearity Coil
T7	17Ω		259062-6			MWC-6		WC-12 ③	212R1	Width Coil
T8	9Ω		259114-3							

① Bend mounting bracket to fit new unit.
② Fabricate new mounting bracket.
③ Connect to coded blue and green terminals.
④ Connect to coded blue and red terminals.
⑤ Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES PRI.	RATING: DC RES SEC.	REPLACEMENT DATA: BENDIX PART No	STANCOR PART No	MERIT PART No	CHICAGO PART No	TRIAD PART No	NOTES
T9	5.7KΩ	3.7Ω	288Ω	.54Ω	265071-12	A-3877 ①	A-2930 ①	RO-9 ①	S-5X ①	① Drill one new mounting hole.

MODELS FM27C, HB27C, (Ch. T14-3)

BENDIX

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	BENDIX PART No.	VIKING PART No.	QUAM PART No.	
SP1 A	10"	PM	3.7Ω	256012-4	10J11	10A4A	
B	6"	PM	3.7Ω		6J4	6A1	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	BENDIX PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	UHF Ant. Trans.	0Ω	0Ω					Sec. tapped
L2	UHF RF Coil	0Ω						Tapped
L3	Fil.Choke	0Ω						
L4	Fil. Choke	0Ω						
L5	Fil. Choke	0Ω						
L6	Fil. Choke	0Ω						
L7	UHF IF Output Coil	.1Ω						
L8	UHF Coil	0Ω						
L9	UHF Coil	0Ω						
L10	VHF Ant. Trans.	0ΩCT	0ΩCT					
L11	Ant.Coils	0Ω						Channel 13
L12	Ant.Coil	0Ω						
L13	Neutr.Coil	0Ω						
L14	Fil.Choke	0Ω						Channel 13
L15	RF Coil	0Ω						
L16	RF Coils	0Ω						
L17	Mixer Grid Coil	0Ω						Channel 13
L18	Mixer Grid Coils	0Ω						
L19	Osc.Plate Coil	0Ω CT						Channel 13
L20	Osc. Coils	0Ω						Channel 6
L21	Osc. Coil	0Ω						
L22	Conv.Plate	.1Ω						
L23	Fil.Choke	0Ω						
L24	1st.Video IF	0Ω		259138-1				Includes trap &1.5MMF capacitor
L25	Assoc.Sound Trap	0Ω		259146-1				Includes C47 & C48
L26	2nd.Video IF	.1Ω	.1Ω	259144-1	17-4522		6219	
L27	3rd.Video IF	.1Ω	.1Ω	259145-1	17-4523		6219	
L28	Adj.Channel Picture Trap	0Ω		259147-1				Includes C54 & C55
L29	4th.Video IF	.1Ω		259148-1				
L30	Fil.Choke	0Ω		259149-1			4604	1.5 Microhenries
L31	Series Peaking Coil	14Ω		259105-7	19-4250	TV-187	6173	270 Microhenries, wound on 22KΩ resistor
L32	Shunt Peaking Coil	14Ω		259105-4	19-3250	TV-185	6181	270 Microhenries
L33	4.5MC Trap	.9Ω		259108-1	20-1004	TV-151	1470	Includes C62
L34	2nd.Sound IF	2Ω	1.9Ω	259154-1	16-3445 ▲	TV-113	6203	
L35	Ratio Det.	6Ω	.4ΩCT	259115-2	17-3493	TV-115 *	6205 *	Tertiary winding-.6Ω
L36	Horiz.Osc.	46Ω		259121-1	19-1576	TV-163	6210	

▲ Drill mounting hole.
* Use adaptor plate.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	BENDIX PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L37	.080ADC	154Ω	4.6 Hy.	265047-3	C-2309 ①			

① Drill one new mounting hole.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			BENDIX PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG P/T (Slo/Blo)	2/10 A.	266164-5201		315.200 (3AG P/T Slo/Blo)		MDV 2/10	

MISCELLANEOUS

ITEM No.	PART NAME	BENDIX PART No.	NOTES
M2	Pilot Lamp		UHF Channel Indicator (2 Used) Type #44
M3	RF Tuner	258051-2	VHF
M4	RF Tuner	258052-1	UHF (Models FM27C, HB27C, TB24DU, TM24DU only)
M5	Video Detector Assy.	259142-2	Includes 5th.Video IF Trans., Sound IF Coil,1.8MMF Cap., 33MMF Cap., 4.7KΩ resistor , Series & Shunt Peaking Coils (2) and Crystal Diode (1N60)
M6	Switch		TV-Phono Selector
M7	Ion Trap	274197-5	
B2	Trimmer Cap.	260009-10	Horiz. Drive, 20-270MMF
	Cabinet	255135-1	Model FM27C
	Cabinet	255136-1	Model HB27C
	Back Cover Assy.	251212-7	
	Safety Glass	257530-19	
	Mask	269088 -1	
	Access Door Assy.	251317-1	
	Dial (UHF)	257640	
	Knob	269076-1	Brightness
	Knob	269077-3	Contrast
	Knob	269080-1	Off/On Volume, Horiz. Hold (2 Used)
	Knob	269087-2	Channel Selector
	Knob	269078-1	Fine Tuning

TROUBLE SHOOTING AIDS (CONT.)

PROPERTY OF
L. F. BLANKENSHIP

POWER

SMALL RASTER WEAK SOUND

Check by substitution V26 and V27. Check B+ filter and decoupling networks.

DIM PICTURE

Check by substitution V26 and V27. Check B+ filter capacitors .

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution V21, V22, V23, V24, and V25. Check waveform at W17.

If Satisfactory	If Unsatisfactory
Check R135, R136, R134, C111, C112, C113, T3, yoke and other associated components.	Check C103, C104, C105 and other associated circuit components.

INSUFFICIENT HIGH VOLTAGE

Check by substitution V21, V22, V23, V24, V25, V26 and V27. Proceed as outlined under "Loss of High Voltage".

BLOOMING

Check by substitution V24, V25, V23 and V22. Check picture tube, T3, yoke and other associated circuit components.

GENERAL

RASTER SOUND NO PICTURE

See "Loss of Video".

RASTER SNOWY PICTURE POOR SOUND

Check by substitution V3, V4, V5, V6, V7 and V8. Check video IF acomponents.

INTERMITTENT STREAKS

Check high voltage section for corona discharge and arcing.

TOTAL LOSS OF SYNC

Substitute V16, V17 and V18. Check setting of the noise inverter control. Check components associated with V16, V17 and V18.

DEAD SET

Check AC interlock assembly. Check switch on volume control. Check T1.

POOR FOCUS

Check adjustment of focus control. Substitute V26 and V27. Check picture tube.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this receiving equipment.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF Tuner Oscillator Circuit may be accomplished by removing the channel selector and fine tuning knobs.

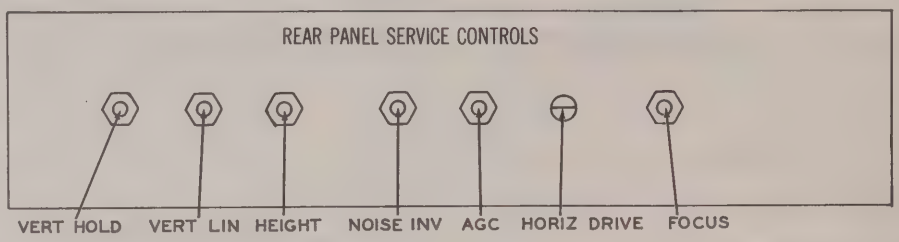
PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass, remove five wood screws holding metal and wood strip at the bottom of the safety glass. Remove metal and wood strip and safety glass. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION



SPECIAL ADJUSTMENTS - Noise Inverter Control Adjustment (on rear apron of chassis).

The noise inverter control is factory adjusted for optimum performance.

If it becomes necessary to adjust same, tune in the strongest TV signal available.

Turn the contrast control fully clockwise.

Starting at maximum counter clockwise position, turn the noise inverter control clockwise until a slight horizontal shift of the picture is noted, then back off the adjustment 1/8 turn.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to set. Adjustment is located on top of chassis. Set the horizontal hold control at the center of its range and adjust the horizontal oscillator slug (L36) until picture synchronizes horizontally. (For location, see tube placement chart).

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate Sound IF Detector Buzz, adjust the ratio detector secondary located on top of chassis. (See tube placement chart).

FUSES

One fuse is used for horizontal sweep protection. (For location, see tube placement chart).

CENTERING

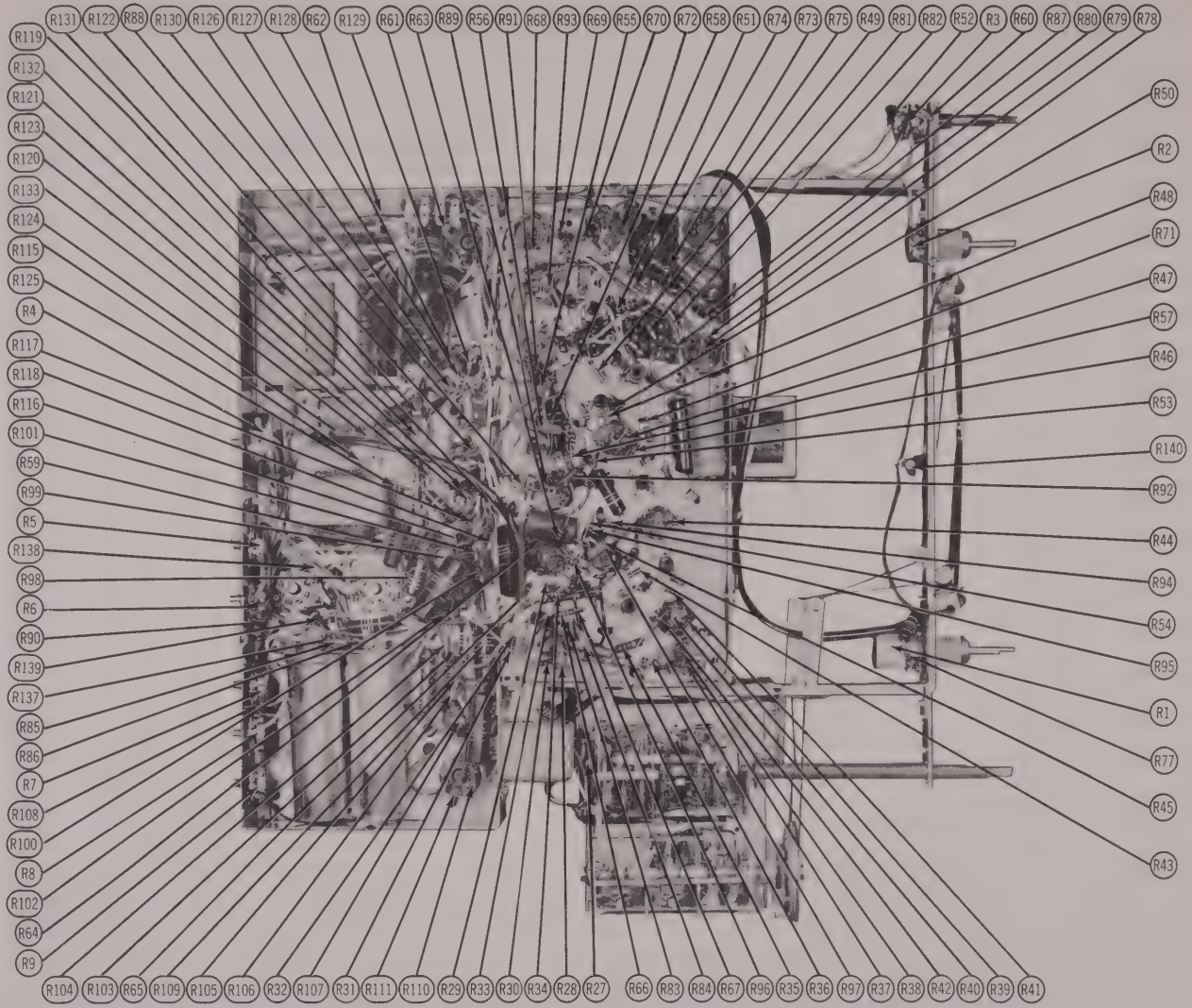
Centering is accomplished mechanically by positioning the focus coil. Adjust the three nuts located on focus coil bracket until picture is properly centered. (Use a 1/4" speed wrench to adjust).

ANTI-PIN CUSHION CORRECTION

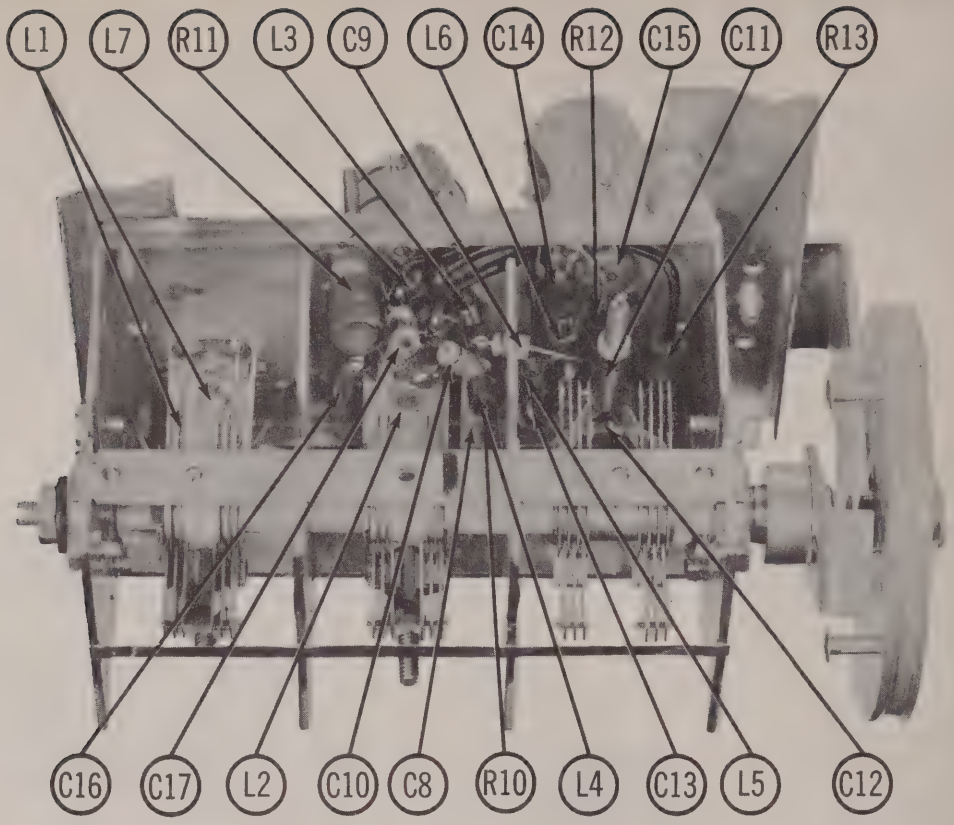
Reduce the picture size so that the sides of the raster are visible, and position the magnets so that all side are straight lines and the corners are at right angles.

DISASSEMBLY INSTRUCTIONS

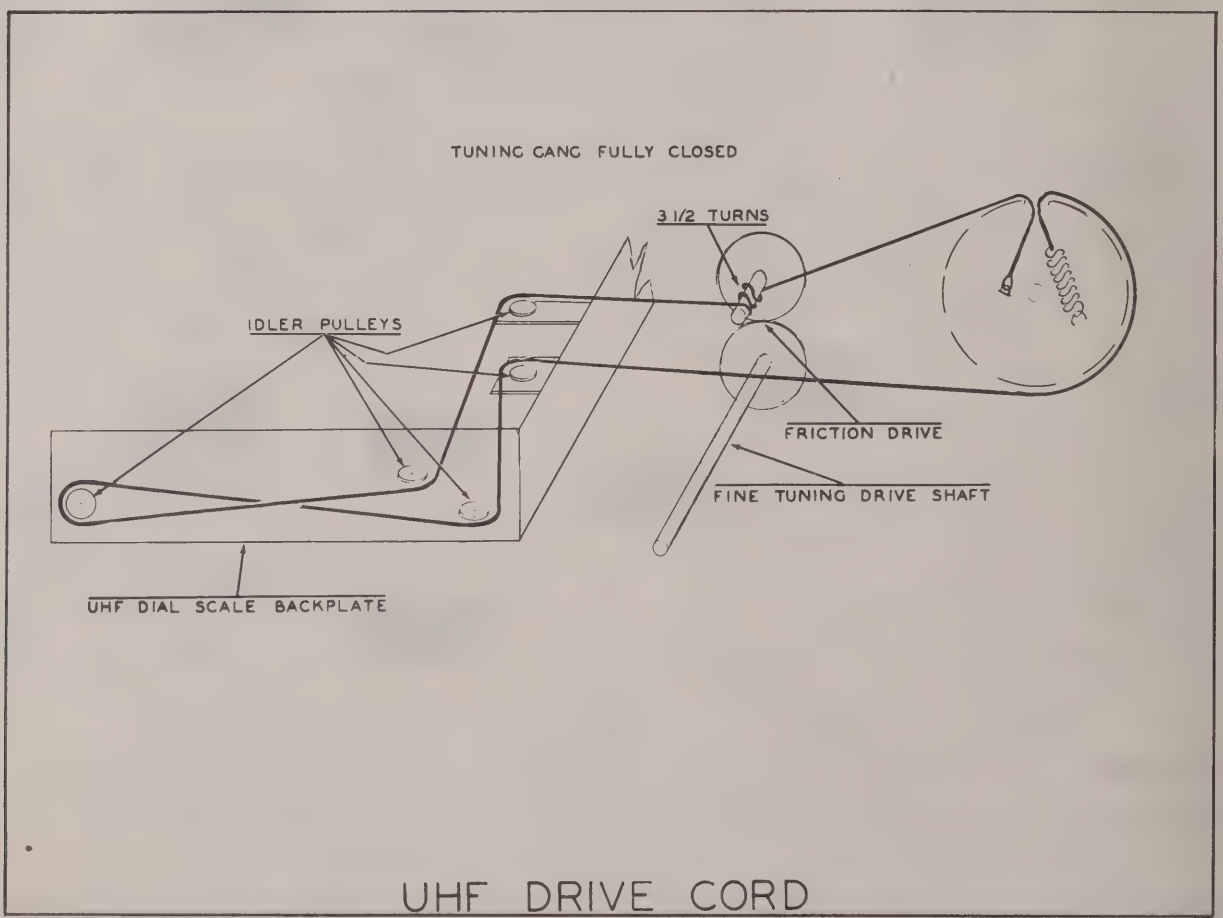
1. Remove 5 push on type control knobs from front panel.
2. Remove 10 wood screws. Remove rear cover.
3. Disconnect built-in antenna. Remove 2 wood screws. Remove antenna bracket.
4. Remove 1 screw. Remove phono switch.
5. Disconnect speaker leads, vert. yoke plug, horiz. yoke plug, CRT socket, HV lead and ground strip.
6. Remove 5 chassis bolts. Remove chassis.
7. Remove 4 speaker nuts. Remove speaker.



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



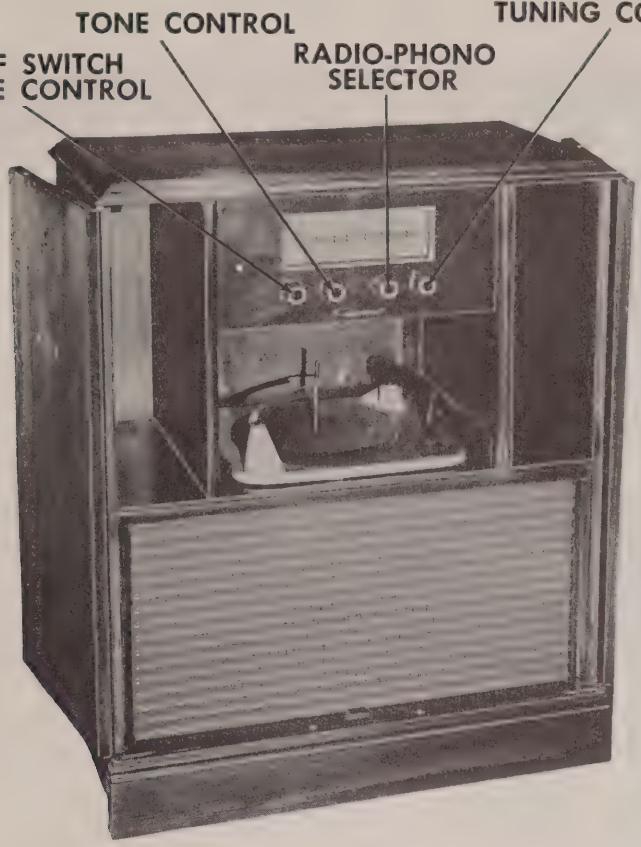
UHF TUNER



UHF DRIVE CORD

CAPEHART
MODEL RP-152

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



CAPEHART
MODEL RP-152

CAPEHART
MODEL RP-152

TRADE NAME	Capehart Model RP-152
MANUFACTURER	Capehart-Farnsworth Corp., Fort Wayne, Ind.
TYPE SET	AC Operated AM-Phono Combination Superheterodyne Receiver with 3 Speed Automatic Record Changer
TUBES (Seven)	Types 6SK7 RF Amp., 6SA7 Mixer, 6J5 Osc., 6SK7 IF Amp., 6SQ7 Det.-AVC-AF Amp., 6V6GT Audio Output, 6X5GT Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING .43 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	537-1620 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark on low frequency end of dial. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting. Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin 8 (grid) of 6SA7 (V2). Low side to chassis.	455KC (400~Mod)	AM	Quiet point	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	Direct	High side to external antenna connection. Low side to chassis.	600KC	"	600KC	"	A5	"
3.	"	"	1620KC	"	Tuning gang fully open	"	A6	"
4.	"	"	1500KC	"	1500KC	"	A7, A8	"

FOR SERVICE INFORMATION ON RECORD CHANGER UNIT, SEE V-M MODEL 950, PHOTOFACT SET 107, FOLDER 13 or RECORD CHANGER MANUAL CM-3.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

CAPEHART MODEL RP-152

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CAPEHART PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	INSTALLATION NOTES
V1	RF Amplifier	6SK7	6SK7	8N	
V2	Mixer	6SA7	6SA7	8R	
V3	Oscillator	6J5	6J5	6Q	
V4	IF Amplifier	6SK7	6SK7	8N	
V5	Det-AVC-AF Amp.	6SQ7	6SQ7	8Q	
V6	Audio Output	6V6GT	6V6GT	7S	
V7	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CAPEHART PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	■30	350	750090B-18	AFH3-169		C131		FP331	TVL-3620	
B	▲30	300								
C	20	25								
C2	240		2240-026	SI240	D6-241		GP2K-241		5GA-T24	
C3	5000		450469A-1	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C4	5000		450469A-1	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C5	5000		450469A-1	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C6	82		2240-012	SI82	D6-820		GP1K-820		5GA-Q82	
C7	1		650501A-27		TCZ-1		NP0K-010			
C8	.047	200	2246-4730	P288-047	DF-503	PTE4S47		PT4147	2TM-S47	
C9	10		2241-513				N330K-100			
C10	5000		450469A-1	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C11	5000		450469A-1	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C12	47		2240-006	SI47	D6-470		GP1K-470	UC-5447	5GA-Q47	
C13	10		2241-513				N330K-100			
C14	.1	200	2246-1040	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C15	5000		450469A-1	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C16A	100		♦452171A-1	SI100	♦PC-50	TM5T1	♦1403-01	UC-531	♦100C1	
B	100			SI100		TM5T1		UC-531		
C17	.01	400	2246-1030	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C18	.01	400	2246-1030	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C19	.0033	600	2248-3320	P688-0033	D6-332	PTE6D33	GP2-333-332	PT6233	6TM-D33	
C20	.01	400	2246-1030	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C21	100		2240-014	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C22	.022	600	2248-2230	P688-022	DF-203	PTE6S22		PT6122	6TM-S22	
C23	.0033	600	2248-3320	P688-0033	D6-332	PTE6D33	GP2-333-332	PT6233	6TM-D33	
C24	5000	1500	453521A-1	HVD15-0047	DD16-502				20HK-D5	
C25	5000	1500	453521A-1	HVD15-0047	DD16-502				20HK-D5	

♦ Items C16A, C16B, R15 are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CAPEHART PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1.5Meg	½	650290A-1	Q13-139X	AT-115		UT-449	Volume- Tap ⓐ 500KΩ
B	Shaft		Not Req.	Not Req.	KSS-3		Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SW-A		US-26	Attach to R1A
R2A	3.2Meg	½	650469A-4	Q13-140	AG-67-Z		U-57	Tone
B	Shaft		Not Req.	Not Req.	KSS-3		Not Req.	Attach to R2A

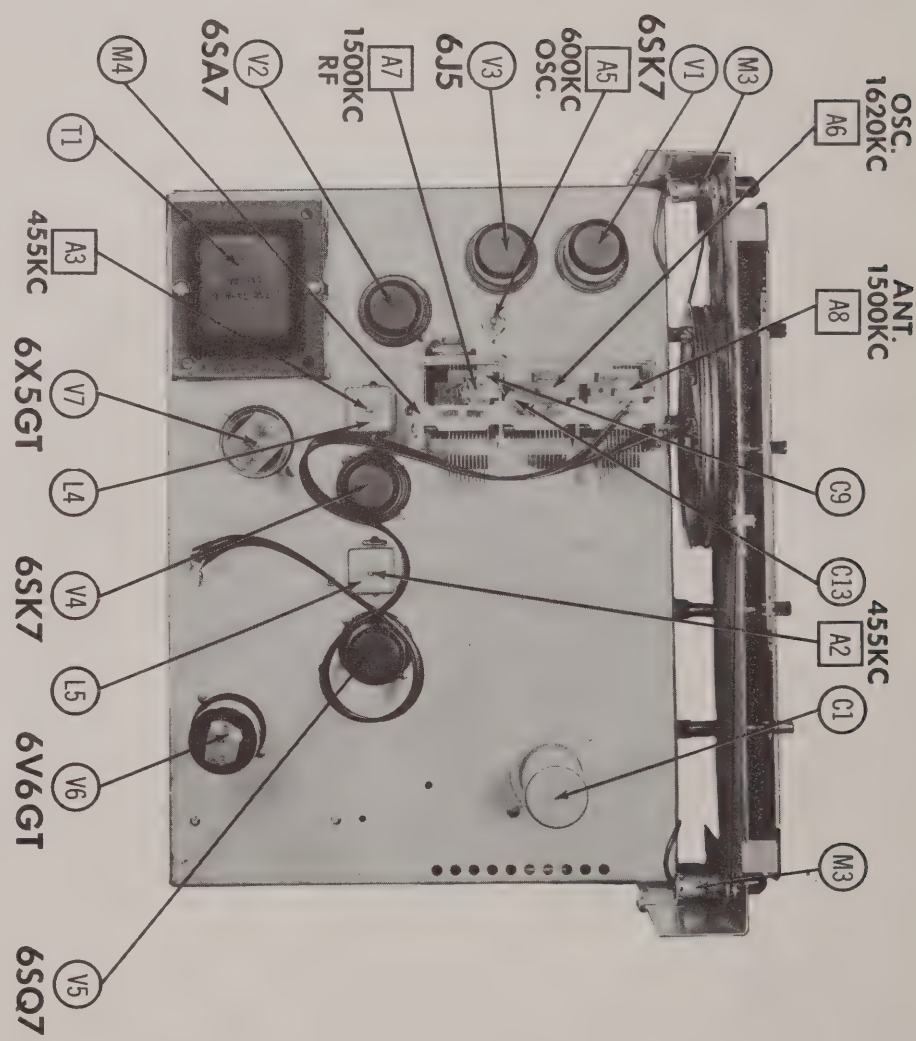
RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: CAPEHART PART No.	IRC PART No.	NOTES
R3	1 Meg	½	3229-105	BTS-1 Meg	
R4	1 Meg	½	3229-105	BTS-1 Meg	
R5	68Ω	½	3229-680	BTS-68	
R6	100KΩ	½	3229-104	BTS-100K	
R7	1000Ω	½	3229-102	BTS-1000	
R8	100KΩ	½	3229-104	BTS-100K	
R9	10KΩ	1	3232-103	BTA-10K	
R10	22KΩ	½	3229-223	BTS-22K	
R11	1000Ω	½	3229-102	BTS-1000	
R12	68Ω	½	3229-680	BTS-68	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: CAPEHART PART No.	IRC PART No.	NOTES
R13	33KΩ	½	3229-333	BTS-33K	
R14	2.2Meg	½	3229-225	BTS-2.2Meg	
R15	47KΩ	½	♦452171A-1	BTS-47K	
R16	330KΩ	½	3229-334	BTS-330K	
R17	39KΩ	½	3229-393	BTS-39K	
R18	10Meg	½	3229-106	BTS-10Meg	
R19	330KΩ	½	3229-334	BTS-330K	
R20	470KΩ	½	3229-474	BTS-470K	
R21	330Ω	1	3232-331	BTA-330	
R22	1500Ω	7	650101A-12	1 3/4A-1500	

♦ Items R15, C16A, C16B are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	CAPEHART PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC @ .43Ω	454VCT .063ADC	6.3VAC @ 3.1Ω		750178A-1				

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		CAPEHART PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T2	7.8KΩ	3.3Ω	576Ω Tap @ 11.5Ω	.34Ω	650307B-1		A-3032			

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	CAPEHART PART No.	VIKING PART No.	QUAM PART No.	
SP1	10"	PM	3.3Ω	850238A-1	10J11	10A31	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	CAPEHART PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	0Ω	1.3Ω	750379A-1				
L2	RF Coil	48Ω	6Ω	650620C-1	14-1027 *	BC-382	72-RF	
L3	Osc. Coil	3Ω		452021A-1			71-Osc.	Tapped @ .8Ω
L4	Input IF	15Ω	13.5Ω	452243A-2	16-6758	BC-352	12-C1	
L5	Output IF	15Ω	13.5Ω	452243A-2	16-6758	BC-353	12-C2	

* Drill mounting hole.

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	CAPEHART PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1						96-0	0-1 & 0-3	

ELECTRO VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

PHONO NEEDLE

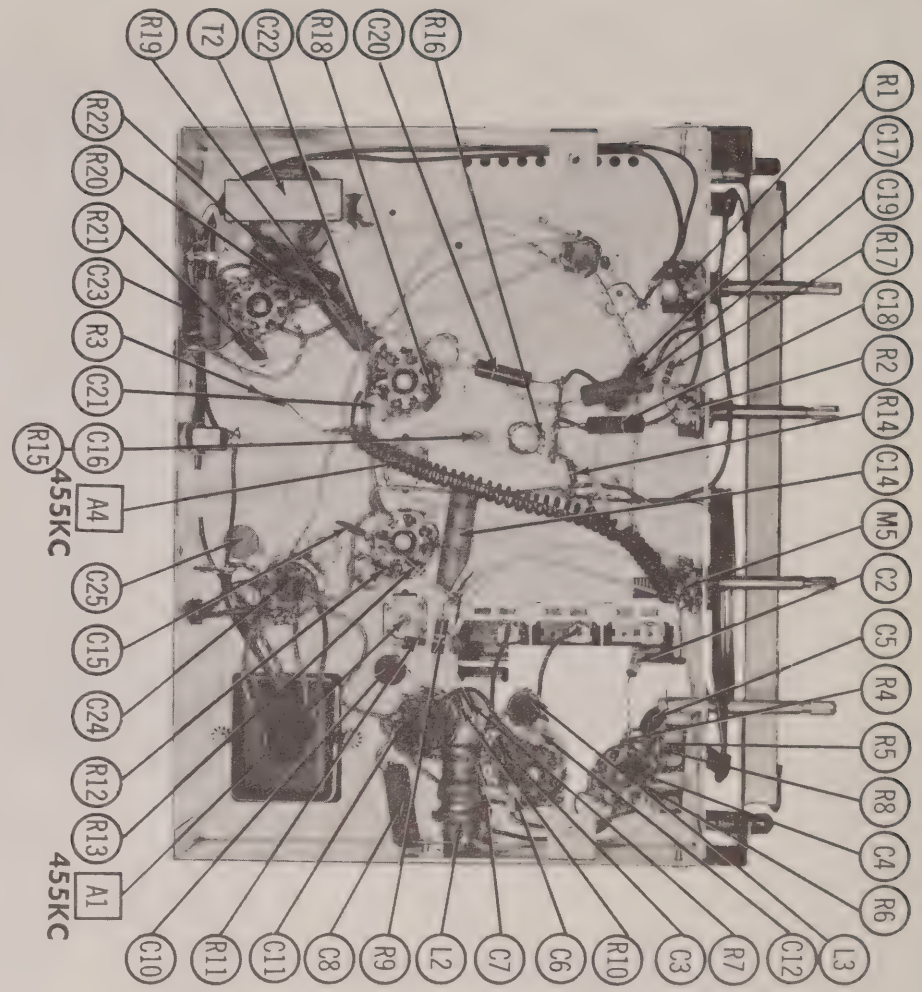
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	CAPEHART PART No.	WALCO PART No.	JENSEN PART No.	
M2		W-11A and A W-11MGA	W-16 or W14 and W17 or W15	

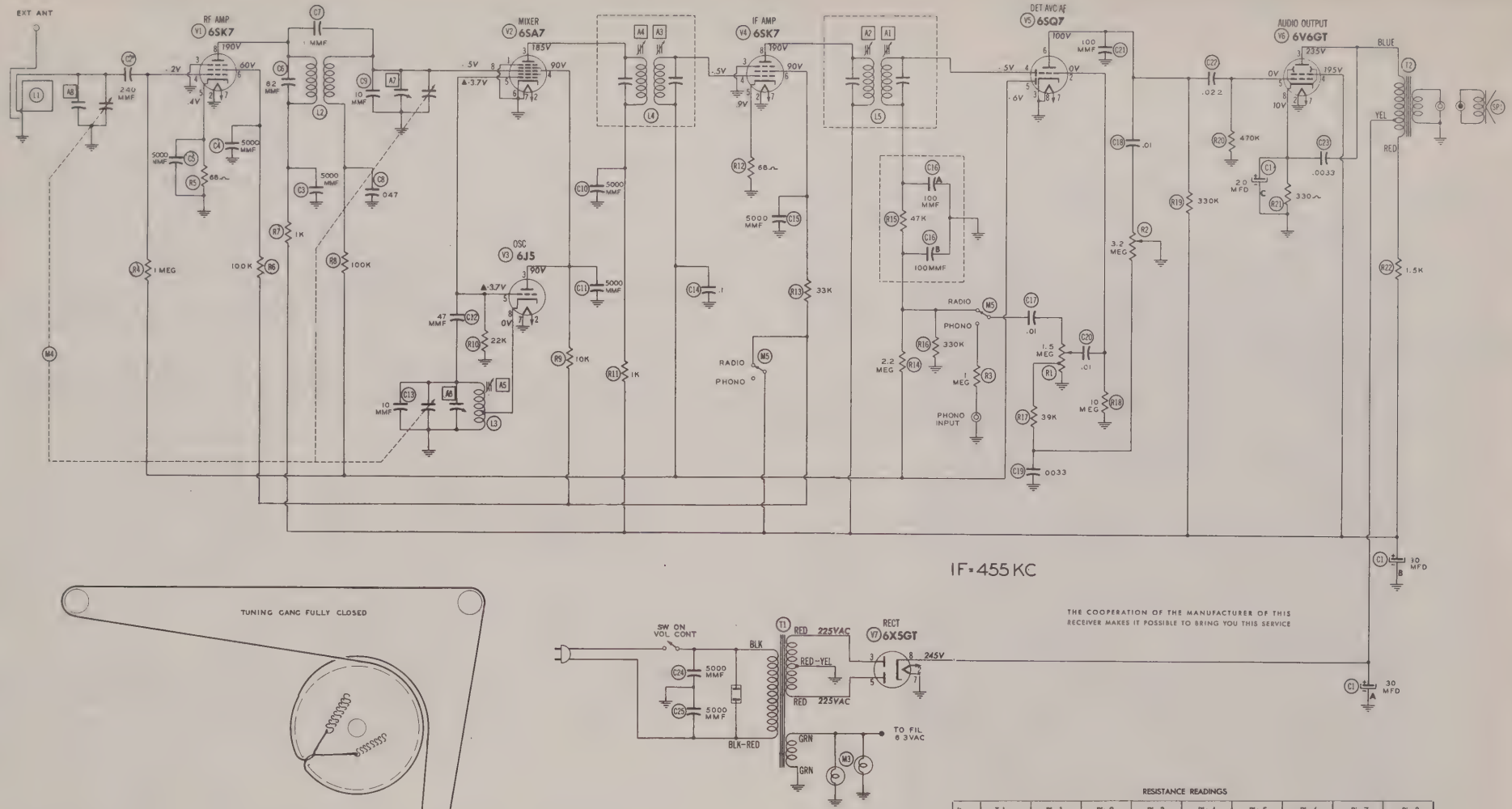
MISCELLANEOUS

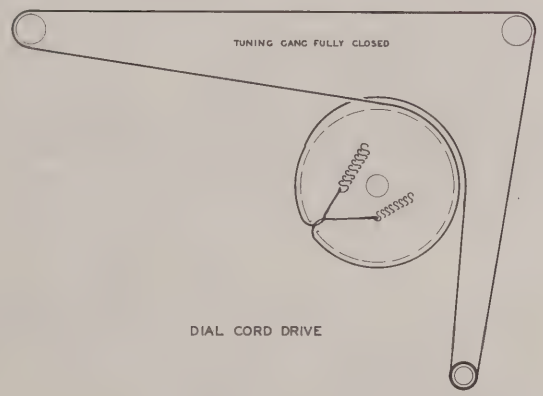
ITEM No.	PART NAME	CAPEHART PART No.	NOTES
M3	Dial Light		Type #44 (2 Used)
M4	Tuning Cap.	650244A-2	35-477MMF, 35-477MMF, 25-195MMF
M5	Switch	650619A-1	Radio-Phono Selector

CHASSIS—BOTTOM VIEW



CAPEHART MODEL RP-152





THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SK7	0Ω	0Ω	0Ω	3.5Meg	68Ω	†100KΩ	.1Ω	†2.5KΩ
V 2	6SA7	0Ω	.1Ω	†2.5KΩ	†11.5KΩ	22KΩ	0Ω	0Ω	2.5Meg
V 3	6J5	0Ω	.1Ω	†11KΩ	INF	22KΩ	INF	0Ω	.8Ω
V 4	6SK7	0Ω	0Ω	0Ω	2.5Meg	68Ω	†35KΩ	.1Ω	†1.5KΩ
V 5	6SQ7	0Ω	10Meg	0Ω	380KΩ	2.5Meg	†330KΩ	.1Ω	0Ω
V 6	6V6GT	0Ω	0Ω	†576Ω	†1.5KΩ	470KΩ	†.34 Ω	.1Ω	330Ω
V 7	6X5GT	0Ω	.1Ω	123Ω	INF	114Ω	INF	0Ω	1 Meg

▲ TAKEN WITH VACUUM TUBE VOLTMETER.
† MEASURED FROM PIN 8 OF V7.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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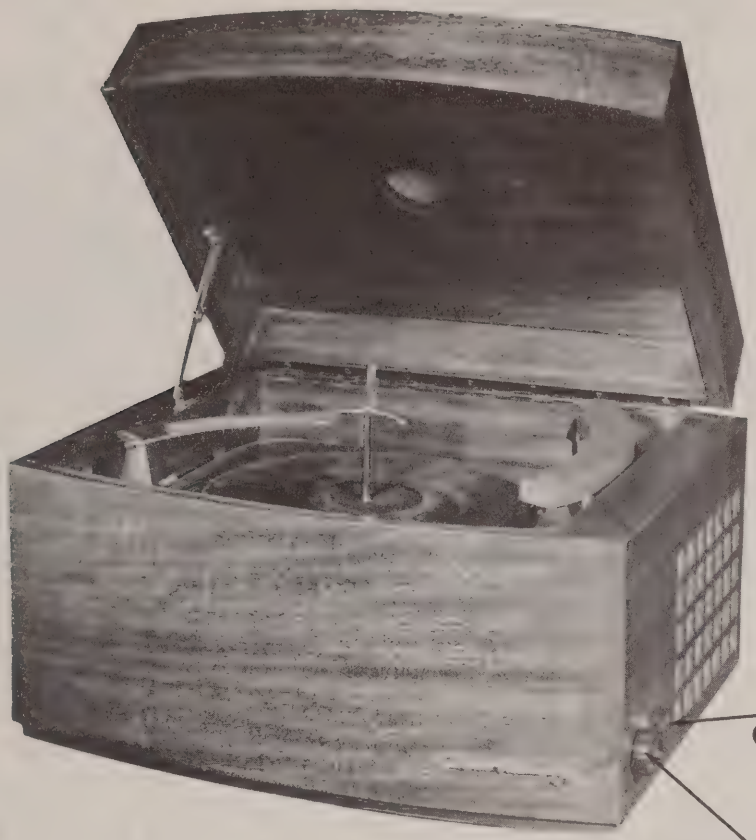
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

COLUMBIA
MODEL 360 Series "B"



COLUMBIA
MODEL 360 Series "B"

TRADE NAME	Columbia Model 360, Series'B"
MANUFACTURER	Columbia Records, Inc., 1473 Barnum Ave., Bridgeport 8, Conn.
TYPE SET	AC Operated Phono Amplifier with 3 Speed automatic Record Player
TUBES (Four)	Types 12AX7 Pre-Amp.-Phase Inv., (2) 35L6 Audio Output, 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING .29 Amp. @ 117 Volts AC

FOR SERVICE INFORMATION ON RECORD CHANGER UNIT- SEE V-M MODEL 950-PHOTOFACT SET 107-FOLDER 13 or RECORD CHANGER MANUAL CM-3.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		COLUMBIA PART No.	STANDARD REPLACEMENT		
V1	Phono Pre-Amp. Phase Inverter	12AX7	12AX7	9A	
V2	Audio Output	35L6	35L6	7S	
V3	Audio Output	35L6	35L6	7S	
V4	Rectifier	35Z5	35Z5	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	COLUMBIA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	40	150	C-EC-842	PRS150/80-40-20				3N538		Yellow
B	80	150								Red
C	20	150								Blue
C2	100	25								Note 1
C3	.005	600								Note 2
C4	.05	200								
C5	100		C-CC-702							
C6	.1	200	C-PC-504							
C7	.1	200	C-PC-504							
C8	.03	200	C-PC-503							
C9	.04	200								
C10	.1	200	C-PC-504							
C11	.05	400	C-PC-502							

Note 1. C2 is a non-polarized electrolytic unit.
Note 2. Some Models use .002MFD in this application. (part #C-PC-501)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	COLUMBIA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	7500Ω	½	VC-2	Q11-115	AG-23-S	AB-13	U-20	Tone
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R1A
R2	3.25Meg		VC-1					Volume-tapped @ 250KΩ

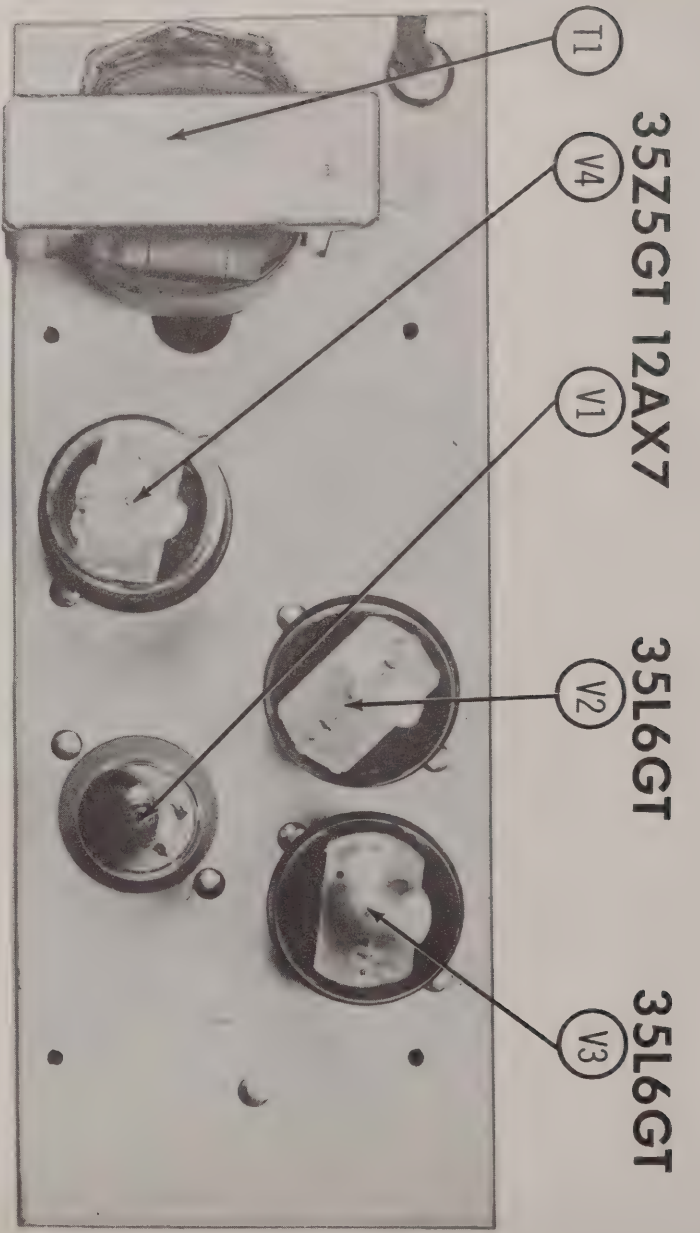
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	COLUMBIA PART No.	IRC PART No.	
R3	47KΩ	½		BTS-47K	
R4	10Meg	½		BTS-10Meg	
R5	4300Ω 5%	½	C-R-1004	BTS-4300 5%	
R6	220KΩ 5%	½	C-R-1007	BTS-220K 5%	
R7	10KΩ 5%	½	C-R-1005	BTS-10K 5%	
R8	47KΩ 5%	½	C-R-1006	BTS-47K 5%	
R9	220KΩ 5%	½	C-R-1007	BTS-220K 5%	
R10	470KΩ 5%	½	C-R-1008	BTS-470K 5%	
R11	75Ω 5%	2	C-R-1003		

Note. Not used in all models.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	COLUMBIA PART No.	IRC PART No.	
R12	470KΩ 5%	½	C-R-1008	BTS-470K 5%	
R13	18KΩ 5%	½		BTS-18K 5%	
R14	100Ω	2	C-R-1002		
R15	10KΩ 5%	½	C-R-1005	BTS-10K 5%	
R16	22Ω	1			
R17	600Ω	10		1 3/4A-600	
R18	56Ω	2			
R19	2.2Meg	½		BTS-2.2Meg	Note

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		COLUMBIA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	6.1KΩ	3.3Ω	376Ω CT	.46Ω	C-TR-201					

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	COLUMBIA PART No.	JENSEN PART No.	QUAM. PART No.	
SP1 } SP2 }	6"	PM	3.3Ω	C-SP-201			Two speakers used

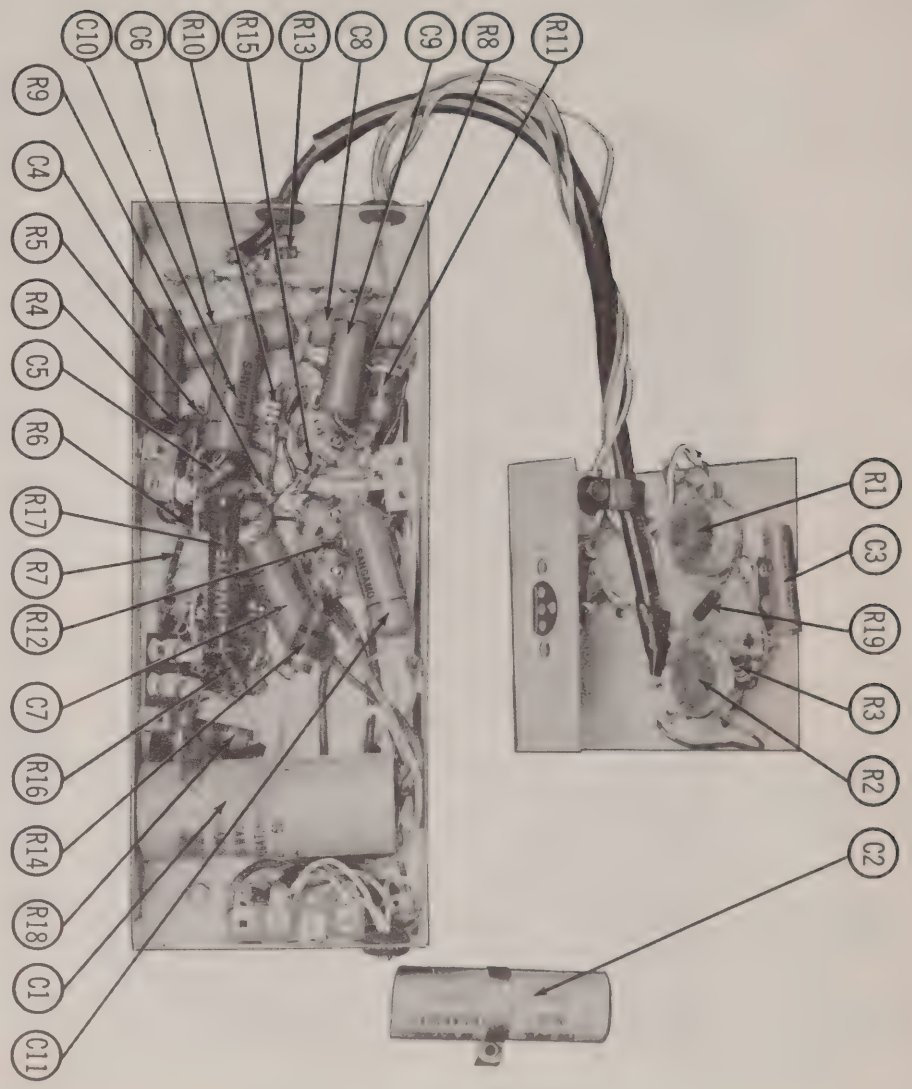
PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	COLUMBIA PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M 1	C-PU-201							

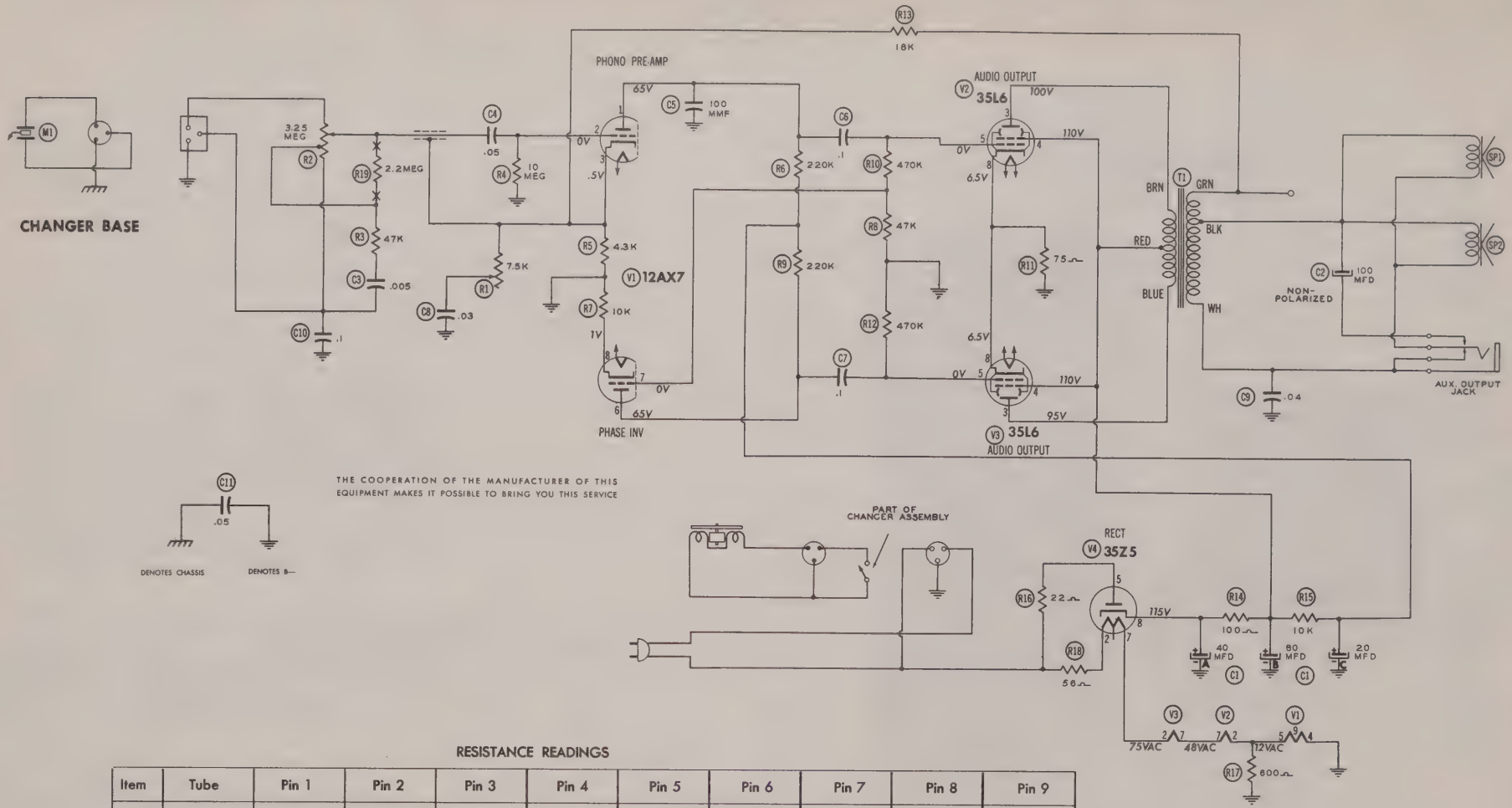
MISCELLANEOUS

ITEM No.	PART NAME	COLUMBIA PART No.	NOTES
	Cabinet	C-CA-201A	Model 2201-A (Mahogany)
	Cabinet	C-CA-201B	Model 2201-B (Walnut)
	Cabinet	C-CA-201C	Model 2201-C (Blonde Mahogany)
	Cabinet	C-CA-201D	Model 2201-D (Limed oak)
	Knob	C-CR-201A	Model 2201-A (Mahogany)
	Knob	C-CR-201B	Model 2201-B (Walnut)
	Knob	C-CR-201C	Model 2201-C (Blonde Mahogany)
	Knob	C-CR-201D	Model 2201-D (Limed Oak)

CHASSIS—BOTTOM VIEW



COLUMBIA MODEL 360, Series "B"



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AX7	†230KΩ	10 Meg	4.3KΩ	0Ω	12Ω	230KΩ	47KΩ	10KΩ	INF
V 2	35L6	0Ω	12Ω	300Ω	†100 Ω	520KΩ	47KΩ	48Ω	75Ω	
V 3	35L6	0Ω	85Ω	†320Ω	†100Ω	470KΩ	†10.1KΩ	48Ω	75Ω	
V 4	35Z5	170Ω	120Ω	INF	0Ω	190Ω	†10.1KΩ	85Ω	95KΩ	

† MEASURED FROM PIN 8 OF V 4.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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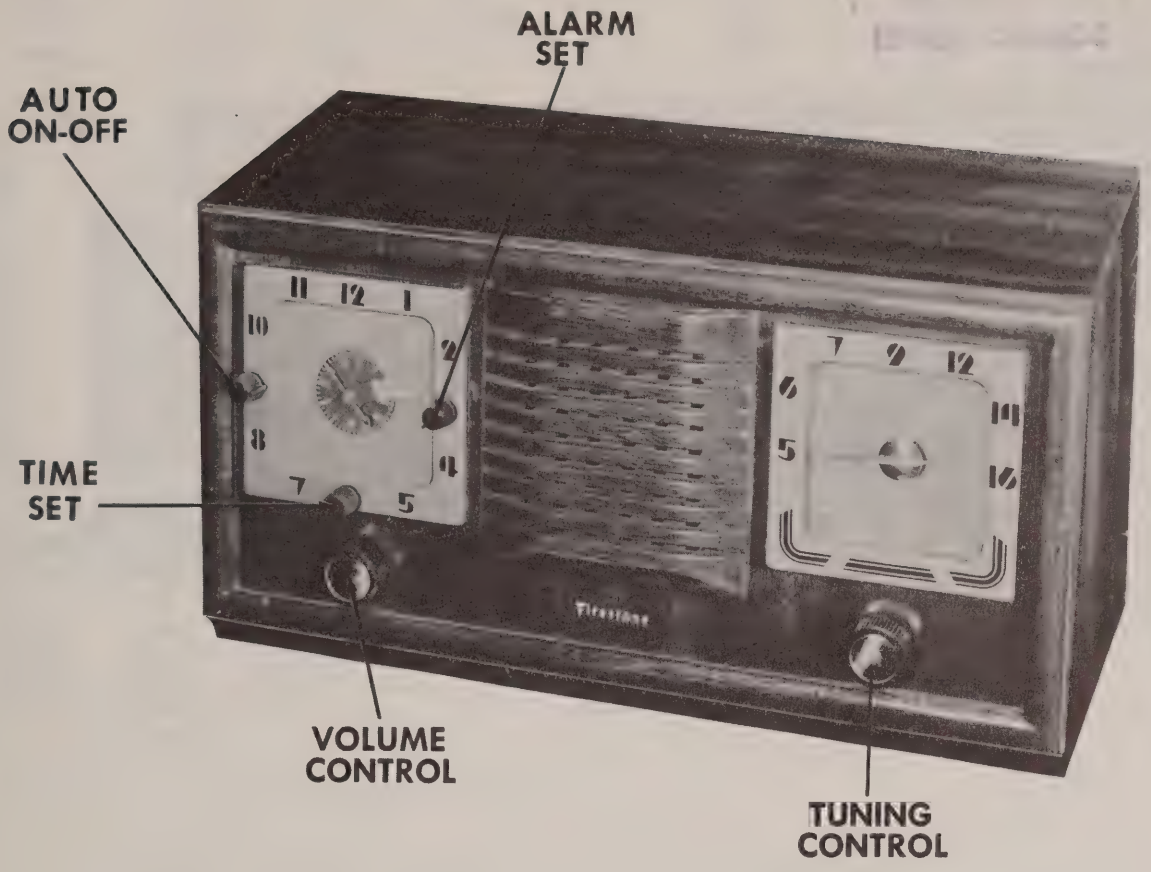
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.



FIRESTONE
MODEL 4-A-110

FIRESTONE
MODEL 4-A-110

TRADE NAME	Firestone Model 4-A-110
SUPPLIER	Firestone Tire and Rubber Co., 1200 Firestone Pkwy., Akron, Ohio
TYPE SET	AC Operated AM Superheterodyne Receiver with Electric Clock
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AT6 Det.-AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-125 Volts AC-60 Cycle
RATING	.21 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	538-1620 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Turn tuning gang fully closed and set pointer parallel to base of dial at low frequency end of dial.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1620KC	"	"	A5	"
3.		Loop	1400KC	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		FIRESTONE PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det.-AVC-AF Amp	12AT6	12AT6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	FIRESTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	■50	150	CE601U	AFH2-16		B016		FP214	TVL-2435	
B	▲50	150								
C2	10			SH0	D6-100	5W5Q1	GP1K-100	UC-541	5GA-Q1	Note 1
C3	.1	400	C104-4	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C4	100	500	CC101	1468-0001	D6-101	5W5T1	GP1K-101	MC235	1FM-31	
C5A	220									
B	.005									
C	250		♦PC-151		♦PC-151		♦1408-02		♦103C5	
D										
E	.005									
C6	.01	600	C103-6	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C7	.047	400	C1503-4	489ZX-05		PJ4S5		PT4147	4TM-S47	
C8	.1	400	C14L	P488-1		PTE4P1		PT401	4TM-P1	Note 2

Note 1. Not used in all Models.

Note 2. When replacing this item with other than manufacturer's part number, coil must be rewound on cap exactly as original.
Items C5A, C5B, C5C, C5D, C5E, R5A, R5B, R5C are combined in one unit.
When replacing items separately C5C and C5D should total 250MMF in some models, separate items are used in these application. When such is the case, C5A becomes 500MMF, (part #CM501), C5B becomes .01MFD (part #C103-6), C5C becomes 200MMF (part #CC201), C5D is omitted , C5E becomes .01MFD (part #C103-6).

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST-ANCE	WATTS	FIRESTONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	750KΩ	½	RV-152	Q13-137	AG-79-Z	B-70	U-51	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	FIRESTONE PART No.	IRC PART No.	
R2	22KΩ	½	R223	BTS-22K	
R3	100Ω	½	R101	BTS-100	Note 1
R4	2.2Meg	½	R225	BTS-2.2Meg	Note 2
R5A	6.8Meg	½		BTS-6.8Meg	Note 3
B	470KΩ	½	♦PC-151	BTS-470K	Note 3
C	470KΩ	½		BTS-470K	Note 3

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	FIRESTONE PART No.	IRC PART No.	
R6	150Ω	½	R151	BTS-150	
R7	33Ω	½	R330		
R8	1500Ω	1	R152-1	BTA-1500	
R9	270KΩ	½	R274	BTS-270K	

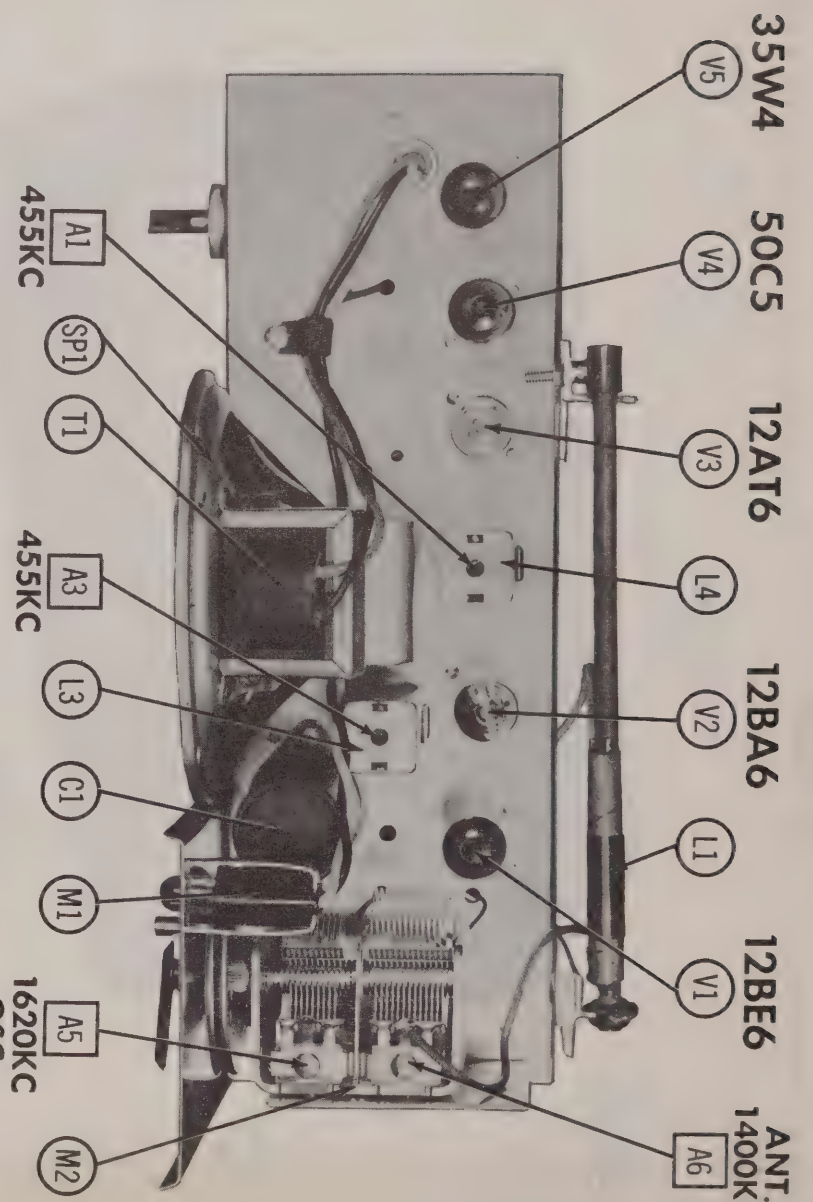
♦ Items R5A, R6B, R5C, C5A, C5B, C5C, C5D, C5E are combined in one unit.

Note 1. Some models may use a 82Ω resistor in this application.

Note 2. Some models may use a 2 Meg resistor in this application.

Note 3. In some models seperate items are used, when such is the R5A becomes 10 Meg; 5B becomes 250KΩ; & R5C becomes 500KΩ.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		FIRESTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	4.2KΩ	3.4Ω	300Ω	.46Ω	Part of Spkr.	A-3856	A-2930	RO-302	S-53X ①	① Drill one new mounting hole.

SPEAKER

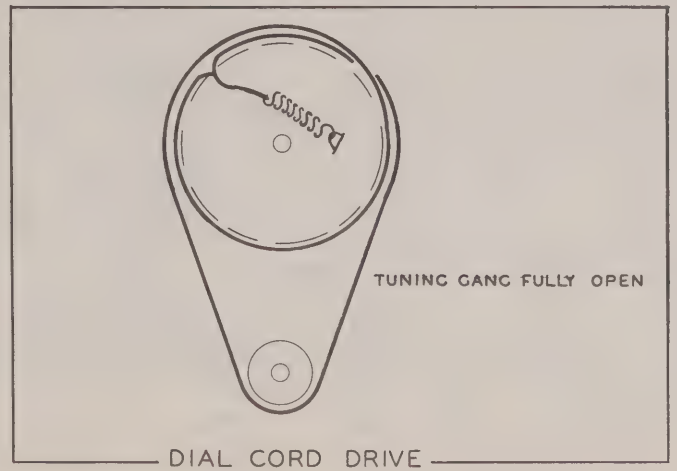
ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	FIRESTONE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5"	PM	3.4Ω	PM-252	ST-105 Mod. P5-X	5A1	

COILS (RF-IF)

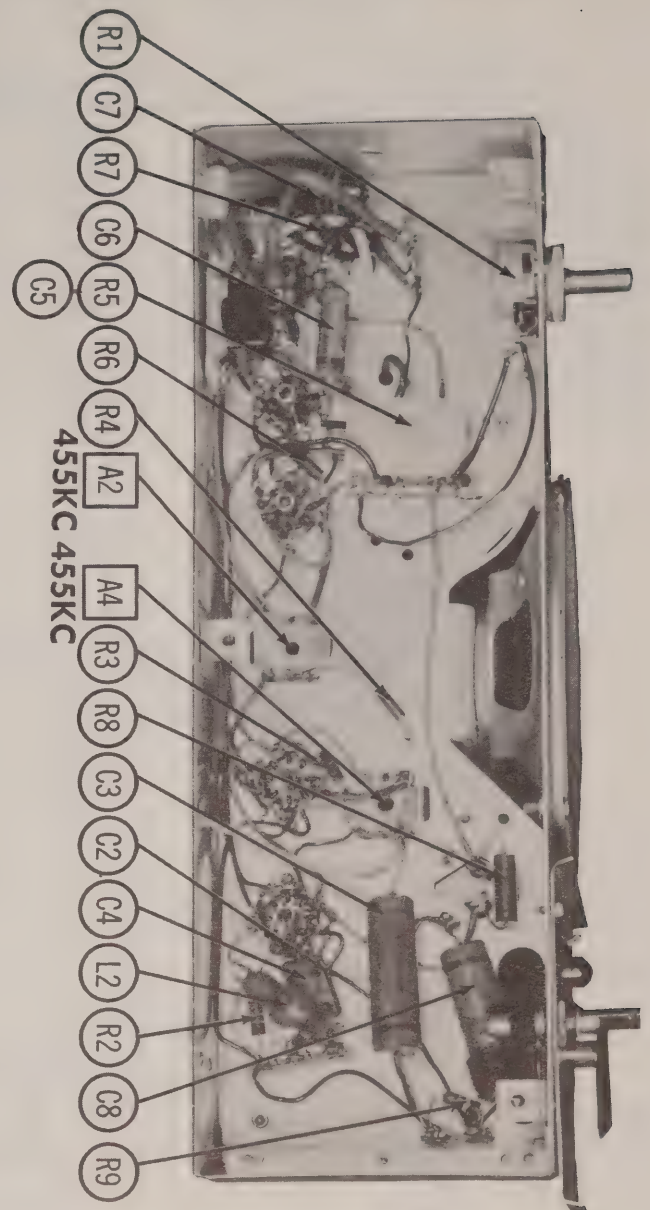
ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	FIRESTONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	.3Ω		L-A64				
L2	Osc. Coil	.9Ω	9Ω	L-204	14-1074		70-Osc.	
L3	Input IF	18Ω	18Ω	1655-16	16-6758	BC-352	12-C1	
L4	Output IF	18Ω	18Ω	1655-16	16-6758	BC-353	12-C2	

MISCELLANEOUS

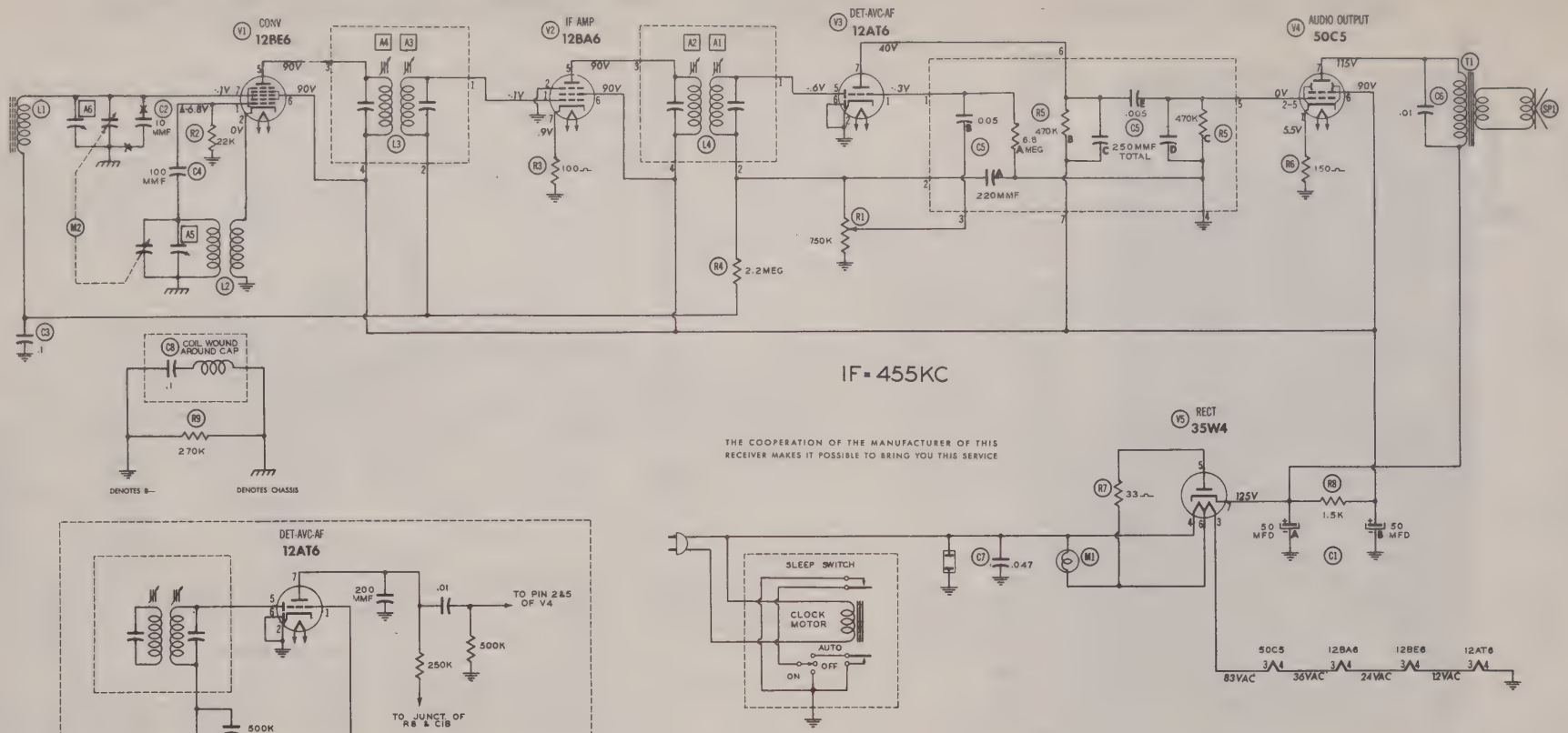
ITEM No.	PART NAME	FIRESTONE PART No.	NOTES
M1	Dial Light	T-47	Type #47
M2	Tuning Capacitor	CV-149	43-462MMF, 34-200MMF
	Clock	C57G84	
	Cabinet	H175B	Blonde
	Cabinet	H175M	Mahogany
	Cabinet	H175L	Maple
	Window (Dial)	H-152	
	Pointer	H-106	
	Knob	H60	Volume, Tuning (2 used)
	Knob	H61	Clock (3 used)

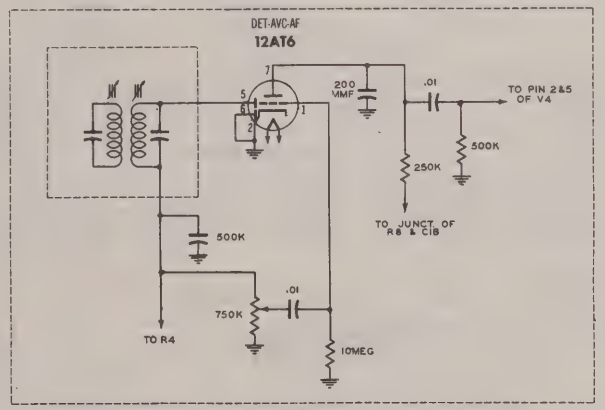


CHASSIS—BOTTOM VIEW



FIRESTONE MODEL 4-A-110





ALTERNATE CONNECTIONS FOR DET-AVC-AF WHEN PC-151 UNIT NOT USED

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.9Ω	24Ω	12Ω	†1.5KΩ	†1.5KΩ	2.9Meg
V 2	12BA6	2.9Meg	0Ω	36Ω	24Ω	†1.5KΩ	†1.5KΩ	100Ω
V 3	12AT6	6.8Meg	0Ω	12Ω	0Ω	750KΩ	0Ω	†470KΩ
V 4	50C5	150Ω	470KΩ	85Ω	36Ω	470KΩ	†1.5KΩ	†300Ω
V 5	35W4	INF	INF	85Ω	120Ω	148Ω	115Ω	300KΩ

▲ TAKEN WITH VACUUM TUBE VOLTMETER.
† MEASURED FROM PIN 7 OF V5.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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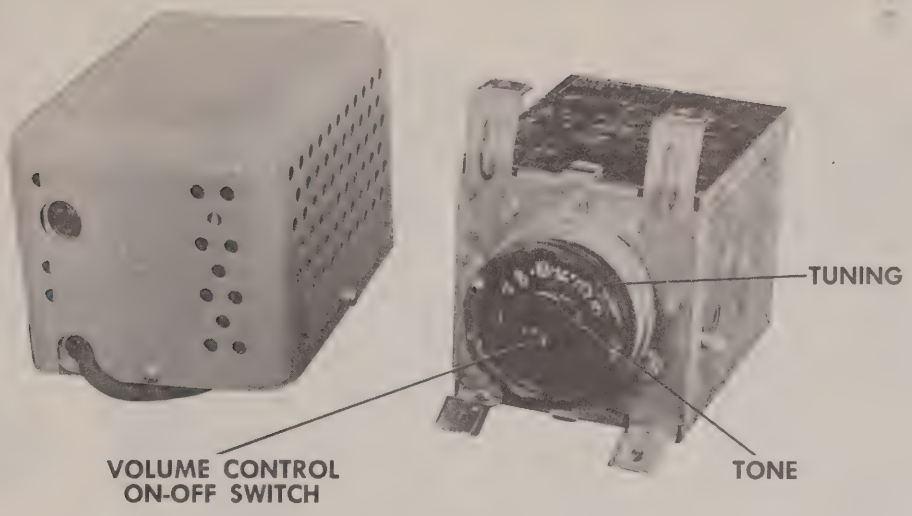
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



TRADE NAME	Ford Model FAE-18805-A (Motorola Model 3MFT)
MANUFACTURER	Motorola Inc., 4545 Augusta Blvd., Chicago 51, Ill.
TYPE SET	Battery Operated Custom Built AM Superheterodyne Receiver (For 1953 Ford trucks)
TUBES (Six)	Types 6BA6 RF Amp., 6BE6 Conv., 6BA6 IF Amp., 6AT6 Det.-AVC-AF Amp., 6AQ5 Audio Output, 6X4 Rectifier
POWER SUPPLY	6 Volt Storage Battery — RATING 5.8 Amp. @ 6.3 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Use special alignment toool for tuner cores - Motorola part #66A76228 or equivalent.
Set tone control for maximum treble.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis.	265KC (400~Mod)	Extreme high freq. end of dial	Across voice coil	A1, A2, A3, A4	Adjust in order given for maximum output. Repeat adjustment for optimum results.
2.	Fig. 1	Thru dummy to antenna receptacle.	1608KC	"	"	A5, A6, A7	Back tuner cores out of coils to avoid affecting trimmer adjustment. Adjust A5, A6, and A7 in order given for maximum output.
3.	"	"	1400KC	1400KC. (See Fig. 2)	"	A8, A9, A10	Adjust in order given for maximum output.
4.	"	"	1608KC	Extreme high freq. end of dial.	"	A5, A6, A7	Adjust in order given for maximum output. Repeat steps 3 and 4 until no improvement is noted.
5.	"	"	600KC	Tune to 600KC signal	"	R2	Adjust generator for 4 micro-volts output. Set R2, sensitivity control, to obtain 1 watt output (1.79 volts on output meter).

To set dial, tune in a 1400KC signal, place dial scale in 1400KC position and snap into place.

Install receiver, extend antenna to maximum height and adjust A7 for greatest volume on weak signal near 1400KC.

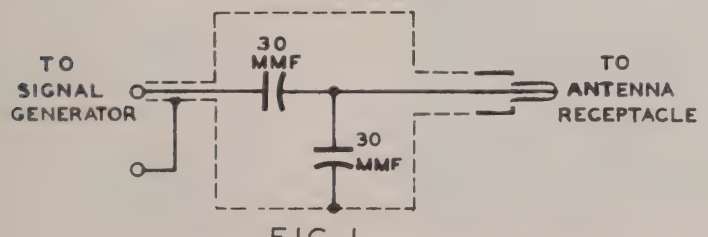


FIG. 1

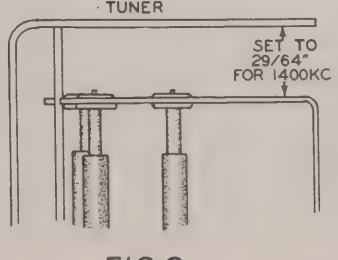


FIG. 2

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FORD
MODEL FAE-18805-A (3MFT)

FORD
MODEL FAE-18805-A (3MFT)

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	INSTALLATION NOTES
		MOTOROLA PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6BA6	6BA6	7BK	
V2	Converter	6BE6	6BE6	7 CH	
V3	IF Amplifier	6BA6	6BA6	7BK	
V4	Det-AVC-AF Amp.	6AT6	6AT6	7BT	
V5	Audio Output	6AQ5	6AQ5	7BZ	
V6	Rectifier	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲10	350	23A485677	AFH3-104		CO77		FP328	TVL-3630	
B	■15	350								
C	20	25								
C2	120	500	21R115729		TCN-120		N750L-121			
C3	15	500	21R401024	SI15	D6-150		GP1K-150	UC-5415	5GA-Q15	
C4	.05	100	8R13514	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C5	.05	400	8R14791	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C6	47	500	21R115890	BPD-000047	D6-470		GP1K-470	UC-5447	5GA-Q47	
C7	220	500	21R115905	SI220	D6-221		GP2K-221	UC-5322	5GA-T22	
C8	22	500	21R401021	SI22N750	TCN-22		N750K-220		5TCU-Q22	
C9	47	500	21R115890	SI47N750	TCN-47		N750K-470	NT-5447	5TCU-Q47	
C10	.05	100	8R13514	P288-05	DF-503	PJ2S5		PT415	2TM-S47	
C11	.01	100	8R472574	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C12	.003	400	8R490437	P688-003	D6-302	PTE6D3	GP2-333-302	PT623	6TM-D3	
C13	.005	100	8R24962	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C14	.02	400	8R12699	P488-02	DF-203	PTE4S2		PT412	4TM-S2	
C15	.006	400	8K71910	P488-006		PTE6D6	GP2-333-602	PT626	6TM-D6	
C16	.02	1000	8K114137	P1088-02		PTE16S2		PT1612	MB-S2	
C17	.5	100	8C580845	VHC-36		MP2P5		RF480	68P20	
C18	.5	100	8K17028	VHC-36		MP2P5		RF480	68P20	

CONTROLS

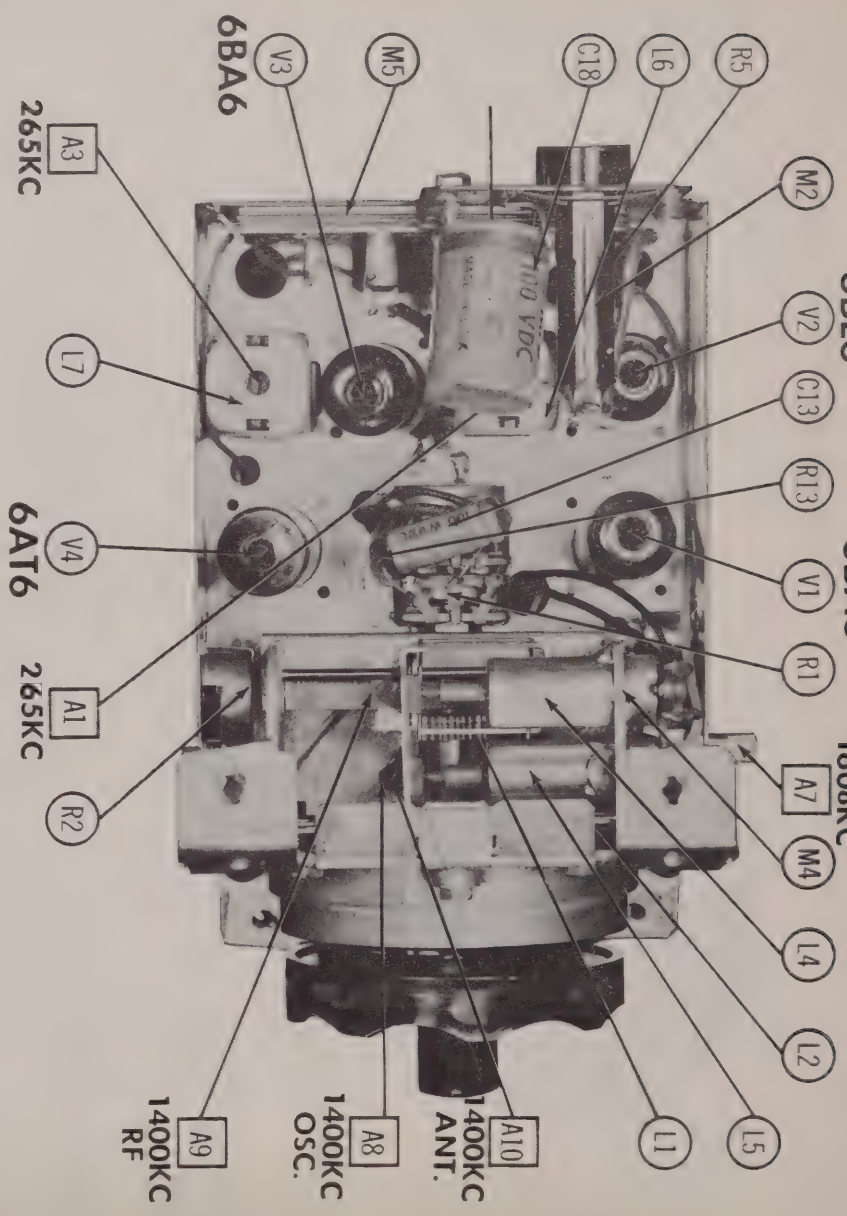
ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	1 Meg	½	18E512027					Tone-Panel
B	250KΩ	½			•			Volume-& Switch Tap@ 80KΩ-Rear
R2	2000Ω with 100Ω stop	1	18K520298					Sensitivity-Wire Wound

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MOTOROLA PART No.	IRC PART No.	
R3	470KΩ	½	6R6032	BTS-470K	
R4	10KΩ	1	6R6430	BTA-10K	
R5	12KΩ	2	6R5766	BTB-12K	
R6	220KΩ	½	6R6015	BTS-220K	
R7	47KΩ	½	6R6056	BTS-47K	
R8	22KΩ	1	6R6289	BTA-22K	
R9	47KΩ	½	6R6056	BTS-47K	
R10	1 Meg	½	6R6004	BTS-1 Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MOTOROLA PART No.	IRC PART No.	
R11	4.7Meg	½	6R2122	BTS-4.7Meg	
R12	1 Meg	½	6R6004	BTS-1 Meg	
R13	47KΩ	½	6R6056	BTS-47K	
R14	220KΩ	½	6R6015	BTS-220K	
R15	270Ω	1	6R6336	BTA-270	
R16	3300Ω	2	6R118360	BTB-3300	
R17	56Ω	½	6R5614	BTS-56	
R18	56Ω	½	6R5614	BTS-56	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA				
					MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
	PRI.	SEC. 1	SEC. 2	SEC. 3					
T1	6.3VAC @ 3A	470VCT .043A			25K512083		P-3068	VT-1 ①	V-16K ①

① Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T2	7.3KΩ	3.3Ω	654Ω	.73Ω	25B502330	A-3878 ①	A-2931 ①	RO-13 ①	R-7X ①	① Drill one new mtg. hole.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	VIKING PART No.	QUAM PART No.	
SP1	5"X7"	PM	3.3Ω	50C513153	57J9	57A15	

COILS (RF-IF)

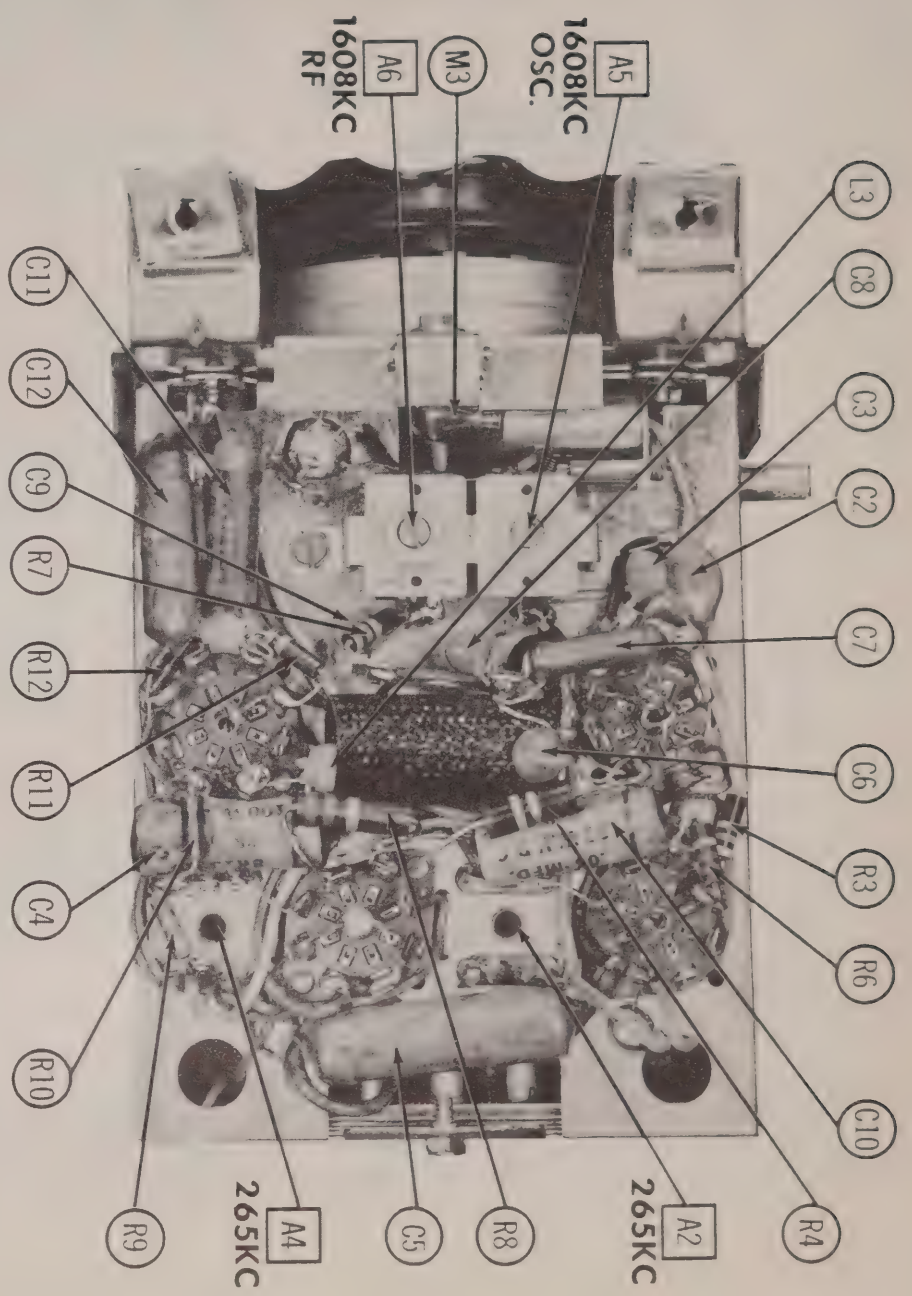
ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	MOTOROLA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Spark Choke	0Ω		24K592197			4606	2.4 Microhenries
L2	Ant. Coil	13Ω		24B522256				Less core, core part #46A502505
L3	IF Trap			24A591317				
L4	RF Coil	13Ω		24B522237				Less core, core part #46A502505
L5	Osc. Coil	.5Ω	2.5Ω	24B522255				Less core, core part #46K522252
L6	Input IF	35Ω	37Ω	24B580193 *	16-6752	BC-350	12-H1	
L7	Output IF	38Ω	40Ω	24K591267 †	16-6754	BC-354	12-H6	
L8	Vibrator Hash Choke	0Ω		24A472535			5221	15.2 Microhenries

* Alternate part #24K512407
† Alternate part #24K512408

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				NOTES
				MOTOROLA PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Interrupter	6.3V	115∿	48B3333	5342	859	5342	

CHASSIS—BOTTOM VIEW



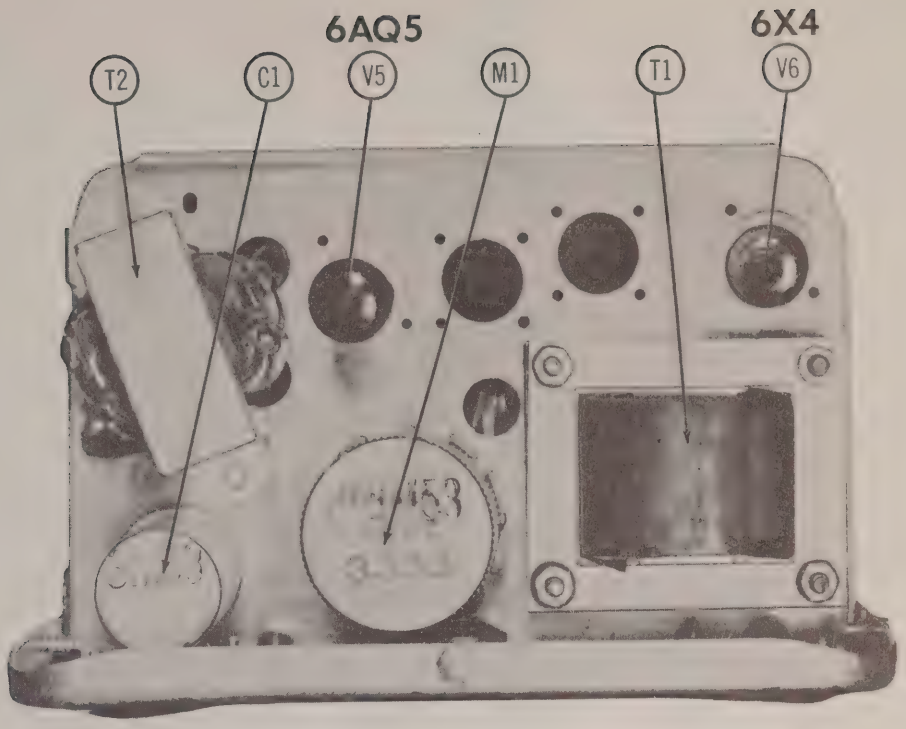
PARTS LIST AND DESCRIPTIONS (Continued)

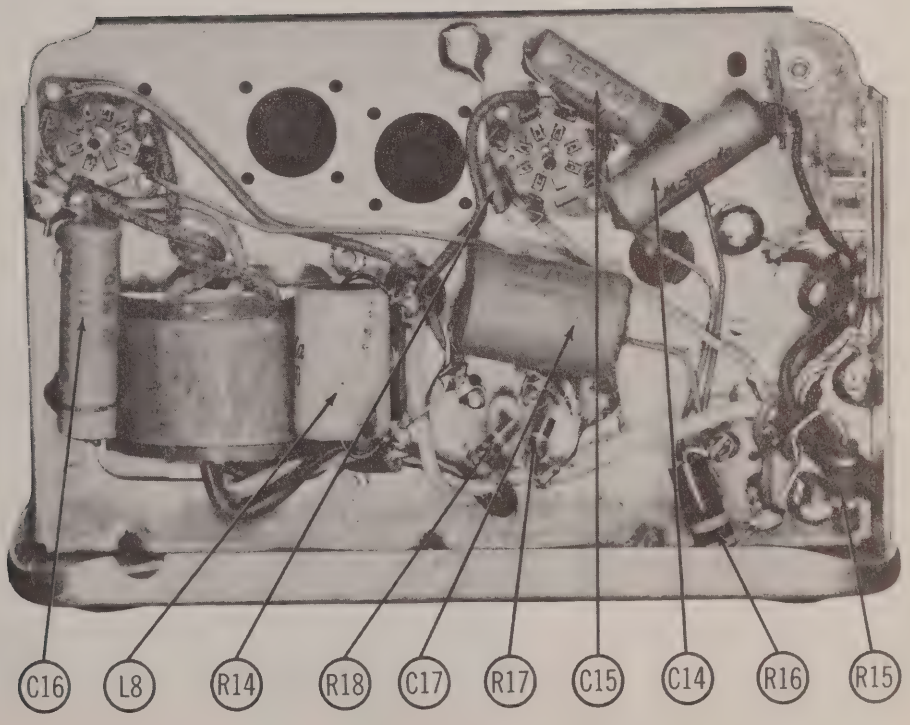
FUSES

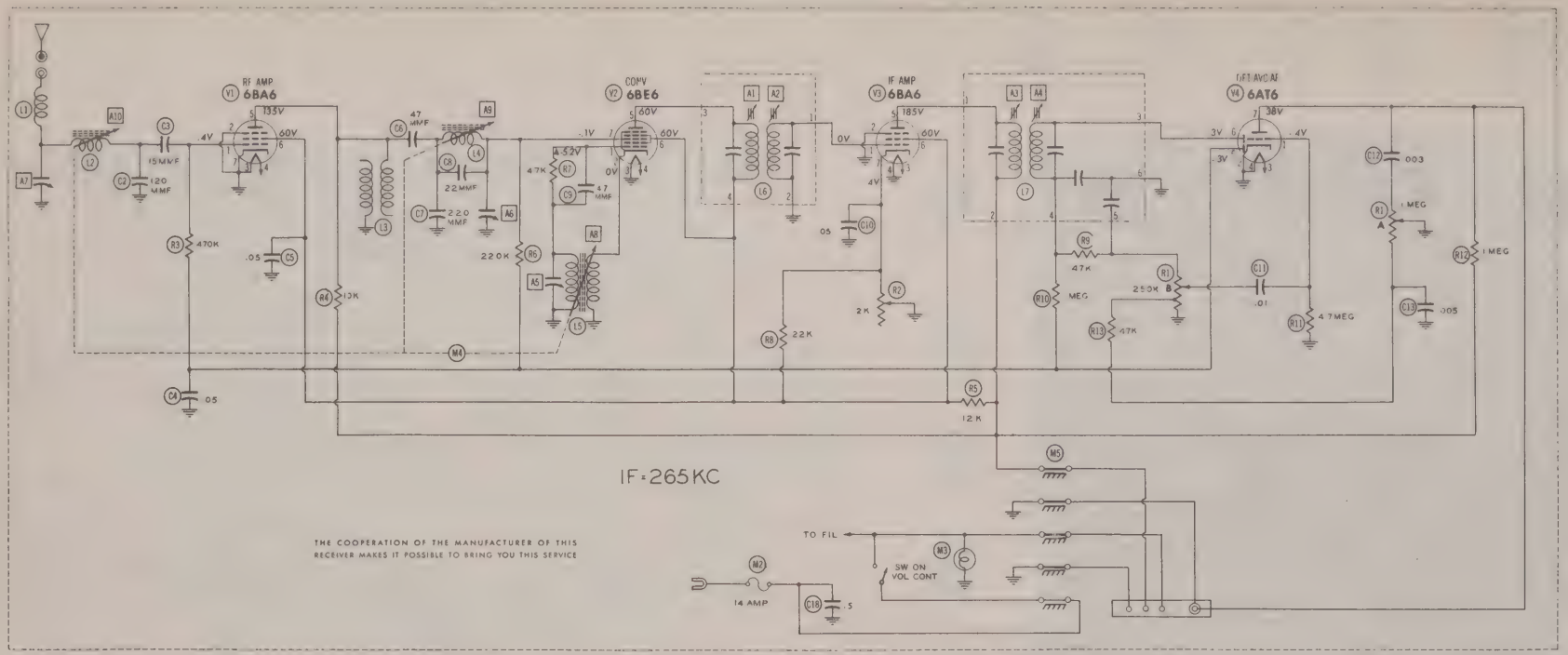
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MOTOROLA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	SFE	14A	65K12894	9A513505 (Receptacle) 30K511576 ("A" Lead)	307014. (SFE-14A)	155014	SFE-14	HRI

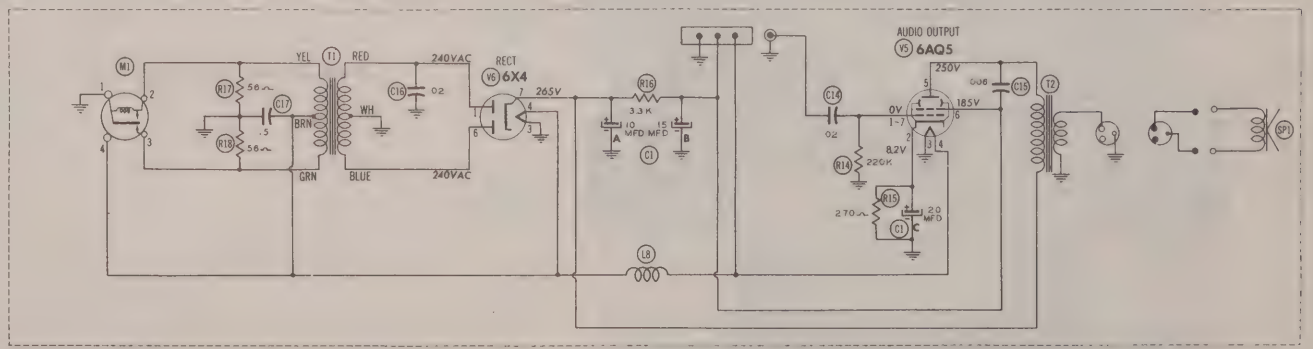
MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M3	Dial Light	65X10867	Type #44
M4	Tuner	77D512022	Complete
M5	Spark Plate Assy.	64B512024	
A7	Trimmer Cap.	20B512089	Antenna, 5-80MMF
A5, A6	Trimmer Cap.	20A512090	RF and Oscillator, 5-80MMF, 485-454MMF resp. (dual)
	Cover (Bottom)	15B520193	
	Housing (Power unit)	15D513524	
	Housing (Speaker)	13D513151	
	Scale (Dial)	34B511859	
	Knob	36B511863	Tuning
	Knob	36B511862	Tone
	Knob	1A520086	Off-On-Volume


6AQ5
6X4
T2
C1
V5
M1
T1
V6


C16
L8
R14
R18
C17
R17
C15
C14
R16
R15





RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BA6	1.8Meg	0Ω	0Ω	.3Ω	115.3KΩ	115.3KΩ	0Ω
V 2	6BE6	47KΩ	.5Ω	0Ω	.3Ω	115.3KΩ	115.3KΩ	1.5Meg
V 3	6BA6	37Ω	0Ω	.3Ω	0Ω	12.3KΩ	115.3KΩ	320Ω
V 4	6AT6	4.7Meg	0Ω	.5Ω	0Ω	1.3Meg	300KΩ	11Meg
V 5	6AQ5	220KΩ	270Ω	0Ω	.3Ω	765Ω	12.3KΩ	220KΩ
V 6	6X4	430Ω	0Ω	0Ω	.3Ω	INF	380Ω	35KΩ

* TAKEN WITH VACUUM TUBE VOLTMETER.
† MEASURED FROM PIN 7 OF V5.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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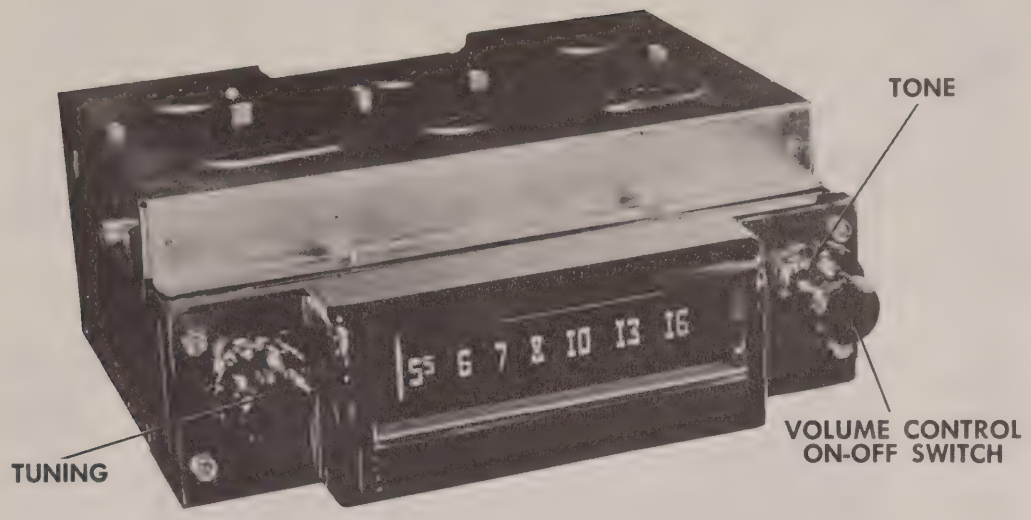
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 6.3 Volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% on voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

HUDSON
MODEL 236476 (SH759)



TRADE NAME	Hudson Model 236476 (Sylvania Model 2H759) (For 1953 Hudson Automobiles)
MANUFACTURER	Sylvania Electric Prod., Inc., Radio & Tel. Div., 254 Rano St., Buffalo 7, N.Y.
TYPE SET	Battery Operated Custom Built AM Automobile Superheterdyne Receiver
TUBES (Six)	Types 6BD6 RF Amp., 6BE6 Conv., 6BD6 IF Amp., 6AV6 Det.-AVC-AF Amp., 6AQ5 Audio Output, 6X4 Rectifier
POWER SUPPLY	6 Volts Storage Battery — RATING 6.0 Amp. @ 6.3 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Turn tone control fully clockwise.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis.	265KC (400%Mod)	Point of non-interference	Across voice coil	A1, A2, A3, A4	Adjust in order given for maximum output. Repeat adjustment for optimum results.
2.	Fig. 1	Thru dummy to antenna receptacle.	1610KC	Tune to extreme high end of dial.	"	A5, A6, A7	Adjust in order given for maximum output.

The following steps are to be performed only if a core or coil has been replaced or tampered with.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
3.	Fig. 1	Thru dummy to antenna receptacle.	1610KC	High frequency end of dial.	Across voice coil	A5, A6, A7	Adjust in order given for maximum output.
4.	"	"	1400KC	Rotate tuning control counter clockwise 1 1/6" turns from fully clockwise position.	"	A8, A9, A10	"

5. Repeat steps 3 and 4 except do not readjust A5 in step 3. Make final adjustments as in step 4.

Install receiver in car and allow to operate 15 minutes to reach normal operating temperature. Fully extend antenna and peak A7 for maximum volume on a weak signal near 1400KC.

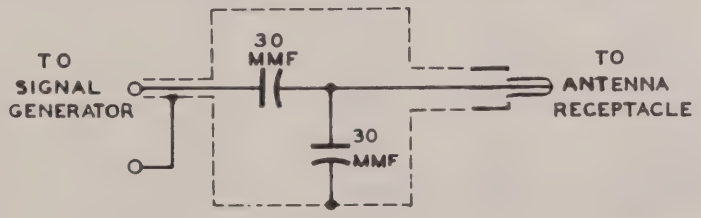


FIG. 1

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	INSTALLATION NOTES
		SYLVANIA PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6BD6	6BD6	7BK	
V2	Converter	6BE6	6BE6	7CH	
V3	IF Amplifier	6BD6	6BD6	7BK	
V4	Det-AVC-AF Amp.	6AV6	6AV6	7BT	
V5	Audio Output	6AQ5	6AQ5	7BZ	
V6	Rectifier	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	SYLVANIA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	■10	350	161-3015	AFH3-104		CO76		FP328	TVL-3630	
B	▲15	350								
C	20	25								
C2	10000		168-0002D	BPD-01	DD-1032	TM5S1	811-01	D6-511	5HK-S1	
C3	100	500	164-0100	1469-0001		5R5T1		MCE235	MS-31	
C4	.047	200	160-02147	P288-047	DF-503	PJ2S5		PT4147	2TM-S47	
C5	.047	200	160-02147	P288-047	DF-503	PJ2S5		PT4147	2TM-S47	
C6	5	500	163-0005	1469-000005		5R5V5		MCB205	MS-55	
C7	330	500	164-0330							
C8	.0056	400	160-04256		D6-562		GP2-333-562			
C9	470	500	163-0470	1468-0005	D6-471	5W5T5	GP2K-471	MC245	1FM-35	
C10	.0056	400	160-04256		D6-562		GP2-333-562			
C11	.047	400	160-04147	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C12	.01	600	162-0611	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C13	.006	1600	160-16260	VBC-22		PTE16D6		PT1626	MB-D6	
C14	.5	100	169-0001	VHC-36		PJ2P5		RF480	68P20	

CONTROLS

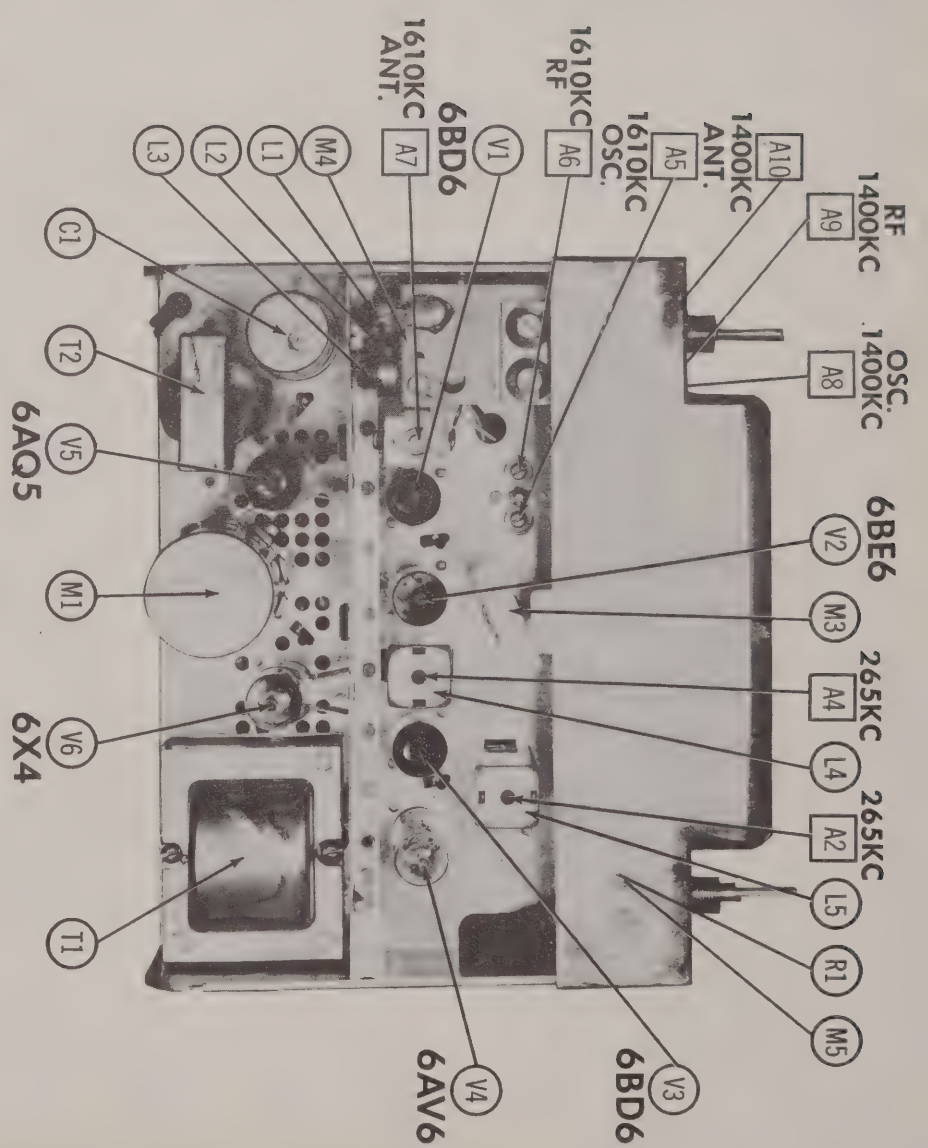
ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SYLVANIA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	157-0022				UF55A	Tone-Panel
B	500KΩ	½					UR55A	Volume-Rear
C	Bushing						EB-214	Attach to R1A
D	Switch						US-26	Attach to R1B

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SYLVANIA PART No.	IRC PART No.	
R2	1 Meg	½	181-0105	BTS-1 Meg	
R3	15KΩ	1	182-0153	BTA-15K	
R4	1 Meg	½	181-0105	BTS-1 Meg	
R5	22KΩ	2	183-0223	BTB-22K	
R6	47KΩ	½	181-0473	BTS-47K	
R7	1 Meg	½	181-0105	BTS-1 Meg	
R8	1000Ω	½	181-0102	BTS-1000	
R9	47KΩ	½	181-0473	BTS-47K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SYLVANIA PART No.	IRC PART No.	
R10	15 Meg	½	181-0156	BTS-15Meg	
R11	1 Meg	½	181-0105	BTS-1 Meg	
R12	220KΩ	½	181-0224	BTS-220K	
R13	330Ω	1	182-0331	BTA-330	
R14	1800Ω	2	183-0182	BTB-1800	
R15	82Ω	½	181-0820	BTS-82	
R16	82Ω	½	181-0820	BTS-82	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	SYLVANIA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	6.3VAC 4A	480VCT .058ADC			141-0025		P-3068		

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		SYLVANIA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T2	6.4KΩ	3.4Ω	570Ω	.98Ω	143-0025	A-3878	A-2921	RO-13	S-3X	

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	SYLVANIA PART No.	VIKING PART No.	QUAM PART No.	
SP1	5"X7"	PM	3.4Ω		57J9	57A1	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	SYLVANIA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	12Ω						Part of Tuning unit, tuning unit part #117-0016.
L2	RF Coil	12Ω						Part of tuning unit, tuning unit part #117-0016.
L3	Osc. Coil	1Ω	4Ω					Part of tuning unit, tuning unit part #117-0016
L4	Input IF	37Ω	36Ω	121-0020	16-6752	BC-350	12-H1	
L5	Output IF	42Ω	42Ω	122-0022	16-6754	BC-354	12-H6	
L6	Fil. Choke	0Ω		147-0019				
L7	Fil. Choke	0Ω		147-0020				
L8	Vibrator Hash Choke	0Ω		147-0021			5221	11 Microheneries

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				NOTES
				SYLVANIA PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Interrupter	6.3V	115∿	511-0001	5301	859	5301	

CHASSIS—BOTTOM VIEW

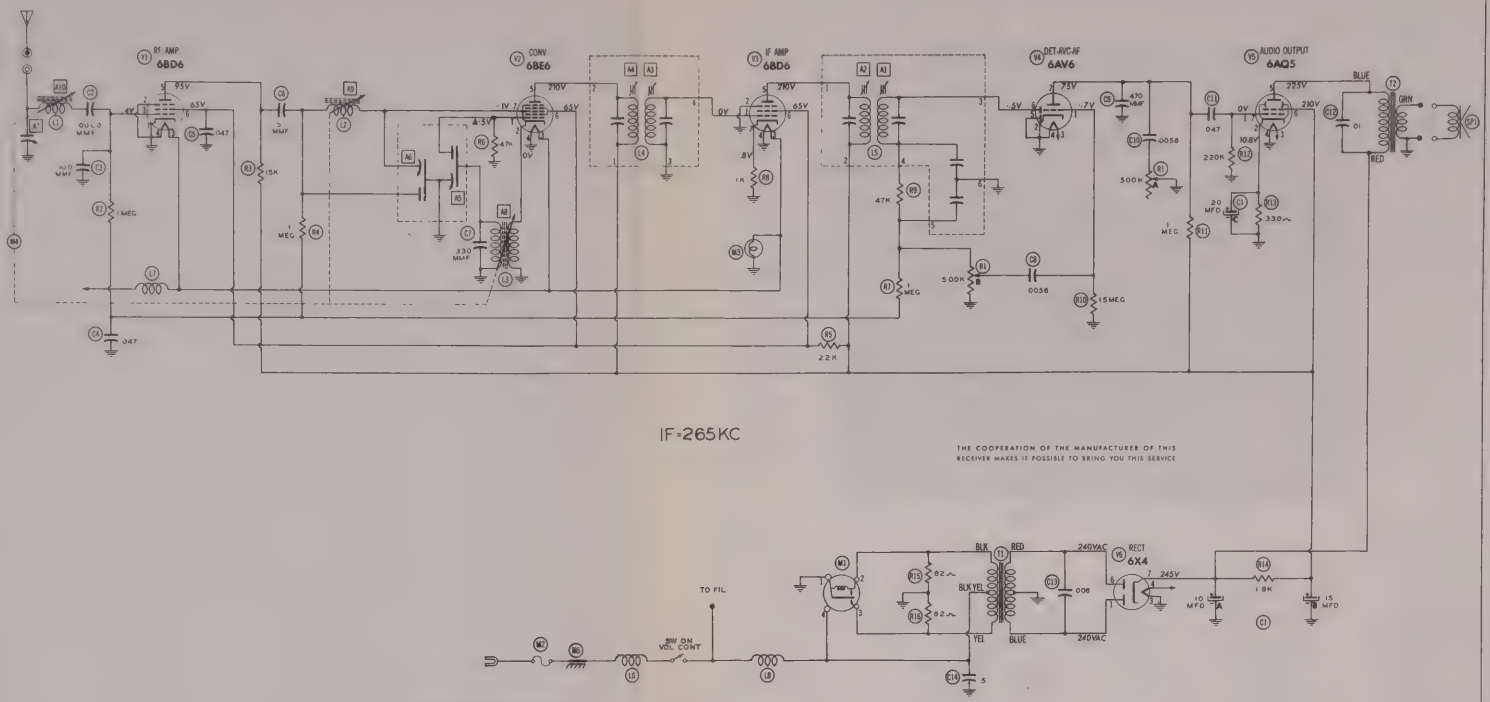
PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			SYLVANIA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	SFE	14A	191-0002	562-008	307014. (SFE-14A)	155014	SFE-14	HRI

MISCELLANEOUS

ITEM No.	PART NAME	SYLVANIA PART No.	NOTES
M3	Dial Light	611-0044	Type #44
M4	Tuning Unit	117-0016	
M5	Spark Plate	167-0011	
A7	Trimmer Cap.	172-0035	Antenna
A5, A6	Trimmer with Fixed Cap.	173-0004	RF and Osc. (Dual)
	Escutcheon (Window)	489-0013	
	Escutcheon	711-0031	
	Dial Background	723-0004	
	Pointer Assy.	791-0025	
	Knob	744-0009	Tone
	Knob	744-0010	Trim (No function)
	Knob	749-0012	Off-On-Volume and tuning (2 used)



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BD6	2.5Meg	0Ω	.1Ω	0Ω	†16.8KΩ	†24KΩ	0Ω
V 2	6BE6	47KΩ	.1Ω	.1Ω	0Ω	†1.8KΩ	†24KΩ	2.5Meg
V 3	6BD6	36Ω	0Ω	.1Ω	0Ω	†1.8KΩ	†24KΩ	82Ω
V 4	6AV6	15Meg	0Ω	.1Ω	0Ω	0Ω	550KΩ	†1 Meg
V 5	6AQ5	220KΩ	330Ω	.1Ω	0Ω	†570Ω	†1.8KΩ	220KΩ
V 6	6X4	314Ω	INF	0Ω	.1Ω	INF	280Ω	1 Meg

▲ TAKEN WITH VACUUM TUBE VOLTMETER.
† MEASURED FROM PIN 7 OF V6.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 6.3 Volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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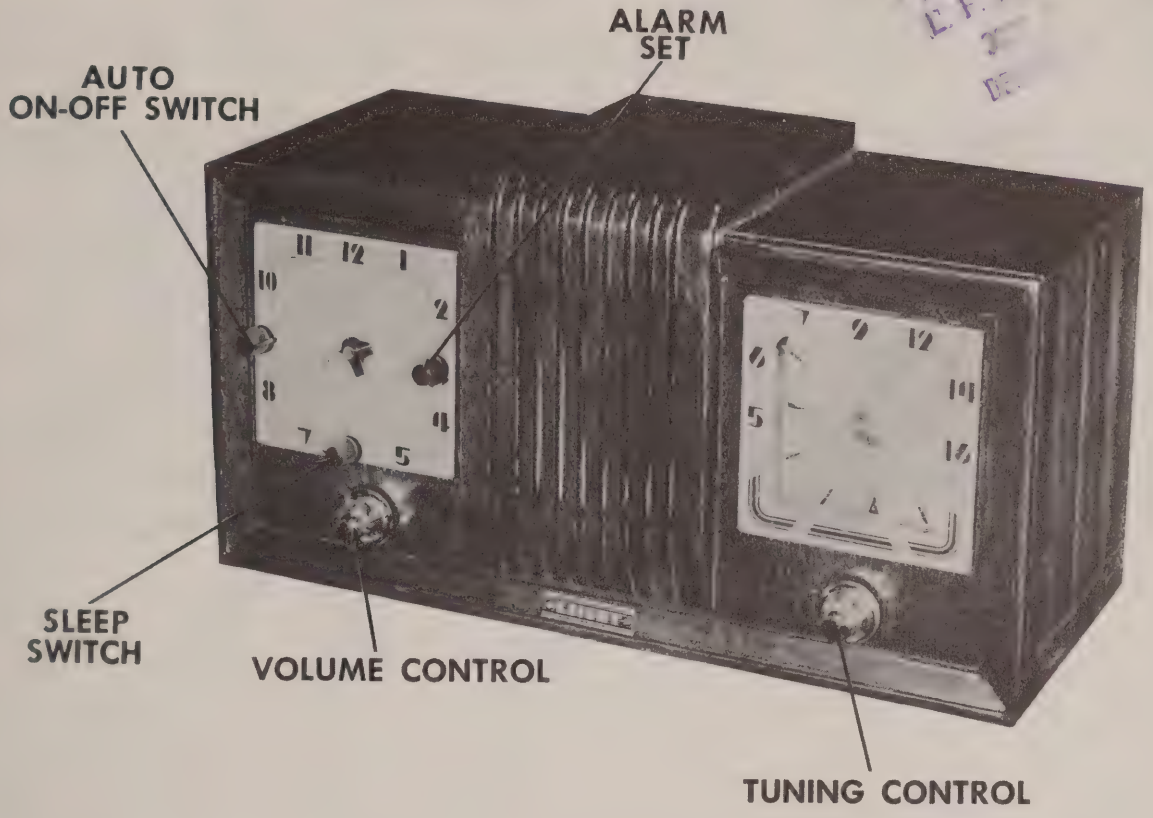

KNIGHT
MODEL 5K715

KNIGHT
MODEL 5K715

TRADE NAME	Knight Model 5K715
SUPPLIER	Allied Radio Corp., 833 W. Jackson Blvd., Chicago 7, Ill.
TYPE SET	AC Operated AM Superheterodyne Receiver with Electric Clock
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AT6 Det.-AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	115-125 Volts AC-60 Cycle — RATING .24 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	538-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to stator of rear section of tuning gang. Low side to B-.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1650KC	"	"	A5	"
3.		Loop	1400KC	Tune to 1400KC	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

KNIGHT MODEL 5K715

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		KNIGHT PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det.-AVC-AF Amp.	12AT6	12AT6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	KNIGHT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	■50	150	CE-601-U	AFH2-16		B016		FP214	TVL-2435	
B	▲50	150								
C2	100		CC200	SII00	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C3	.1	400	C208	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C4	500	500	CC500	1468-0005	D6-501	5W5T5	GP2K-501	MC445	1FM-35	
C5	.01	600	C206	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C6	200		CC201	SII200	D6-201	5W5T2	GP2K-201	UC-532	5GA-T2	
C7	.01	600	C206	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C8	.01	600	C206	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C9	.05	400	C204	P488-05		PTE4S5		PT415	4TM-S5	
C10	.1	400	C14L	P488-1		PTE4P1		PT401	4TM-P1	Note 1
C11	12			SII2	D6-120		GP1K-120	UC-5412	5GA-Q12	

Note 1. Original Mfgr's item includes series coil
When replacing with other than mfgr's part number, rewind coil on replacing.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	KNIGHT PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	750KΩ	½	RV-152	Q13-137	AG-79-Z	B-70	U-51	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	KNIGHT PART No.	IRC PART No.	
R2	22KΩ	½	R306		
R3	2Meg	½	R310		
R4	10Meg	½	R311	BTS-10Meg	
R5	220KΩ	½		BTS-220K	
R6	500KΩ	½	R308		
R7	150Ω	½	R320	BTS-150	

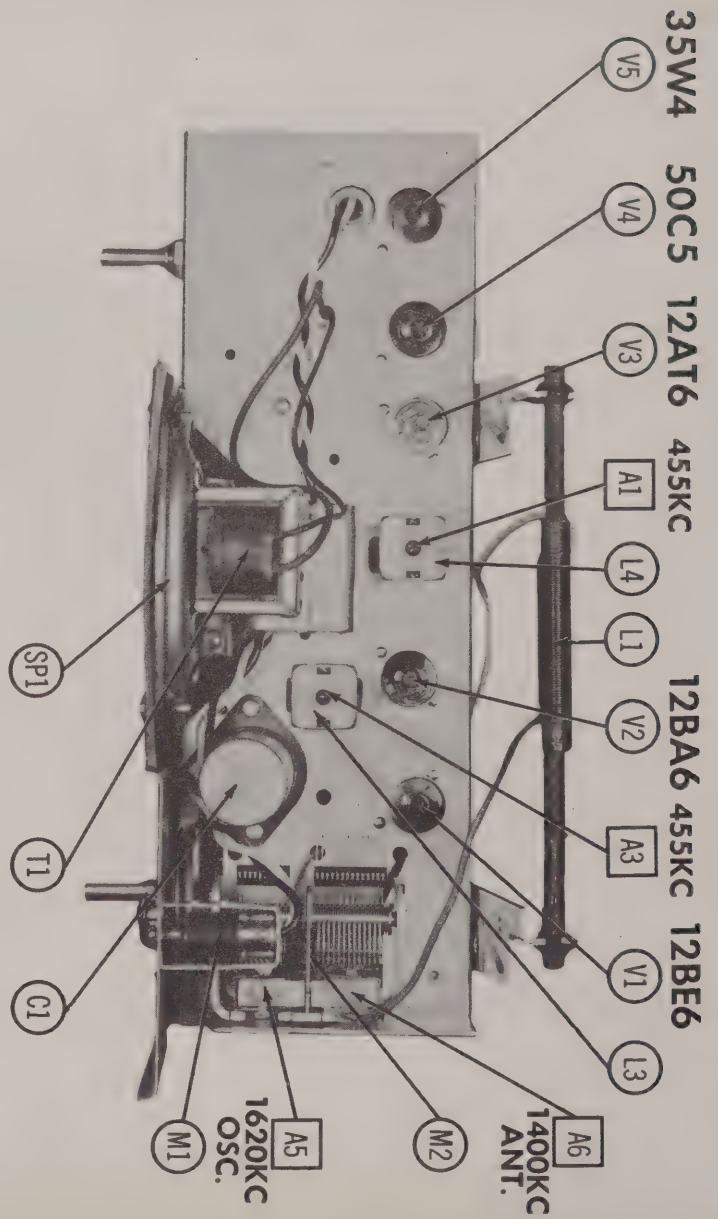
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	KNIGHT PART No.	IRC PART No.	
R8	33Ω	½			Note 1
R9	1500Ω	1	R314	BTA-1500	
R10	220KΩ	½		BTS-220K	
R11	150Ω	½	R320	BTS-150	Note 2

Note 1. Some Models use a 27Ω resistor in this application.
Note 2. Not used in all Models.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		KNIGHT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	3KΩ	3.3Ω	225Ω	.75Ω	Part of Spkr.	A-3332	A-3025	RO-302	S-1X	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	KNIGHT PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5"	PM	3.3Ω	PM-300	ST-105 Mod. P5-X	5A07	

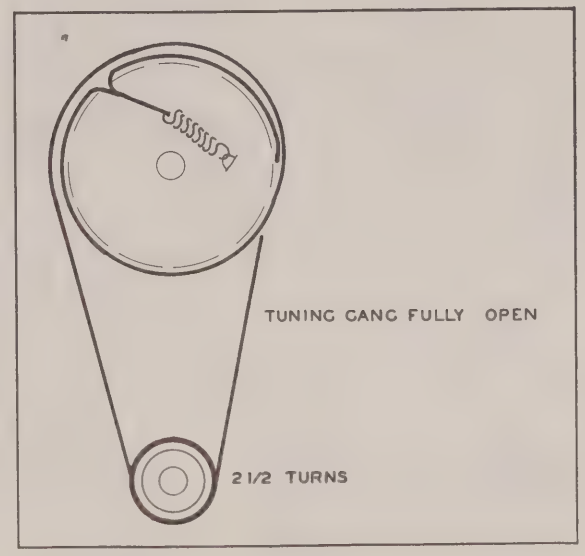
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	KNIGHT PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	.2Ω		L-A51				
L2	Osc.Coil	8Ω		L-201			71-Osc. *	Tapped @ 7.4Ω
L3	Input IF	19Ω	19Ω	1655-16	16-6758	BC-352	12-C1	
L4	Output IF	19Ω	19Ω	1655-16	16-6758	BC-353	12-C2	

* Drill mounting hole.

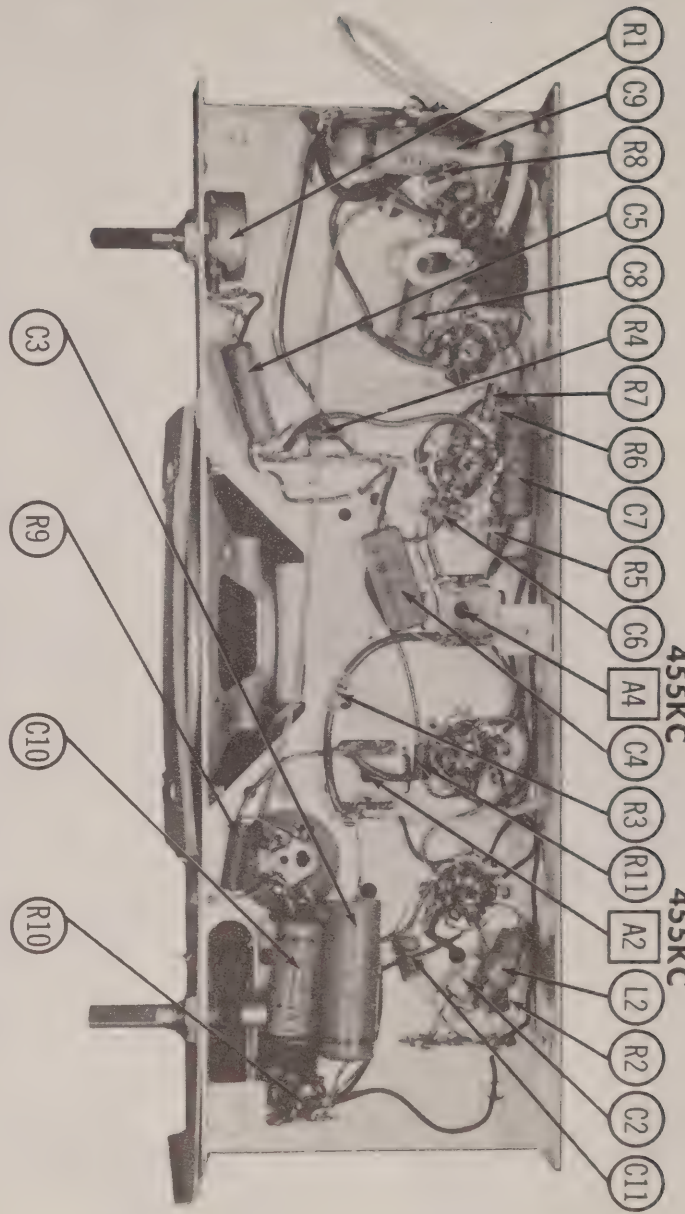
MISCELLANEOUS

ITEM No.	PART NAME	KNIGHT PART No.	NOTES
M1	Dial Light	T-47	Type #47
M2	Tuning Capacitor	CV-149	46-475MMF, 36-200MMF
	Knob	H-101	2 Used
	Clock	C57G27	
	Clock	C57G84	
	Dial Pointer	H-102	
	Dial Pointer	H-152	

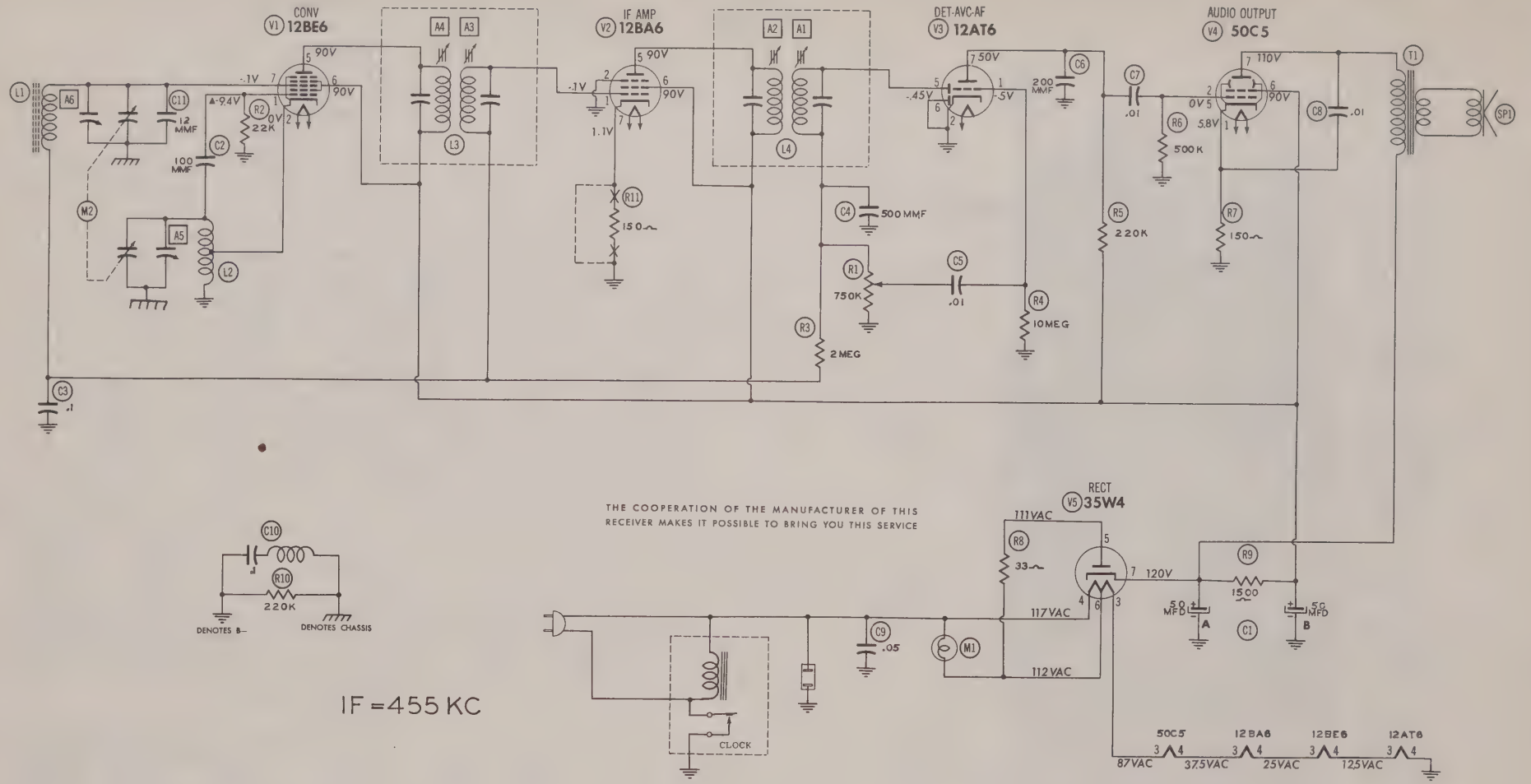


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



KNIGHT MODEL 5K715



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.6Ω	24Ω	12Ω	†1.5KΩ	†1.5KΩ	2.7 Meg
V 2	12BA6	2.7 Meg	0Ω	36Ω	24Ω	†1.5KΩ	†1.5KΩ	150Ω
V 3	12AT6	10 Meg	0Ω	12Ω	0Ω	750KΩ	0Ω	†220KΩ
V 4	50C5	150Ω	500KΩ	84Ω	36Ω	500KΩ	†1.5KΩ	†225Ω
V 5	35W4	INF	INF	84Ω	120Ω	149Ω	116Ω	250KΩ

▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 7 OF V5
NOTE: FILAMENT RESISTANCE TAKEN WITH "OFF-ON" SWITCH IN "OFF" POSITION

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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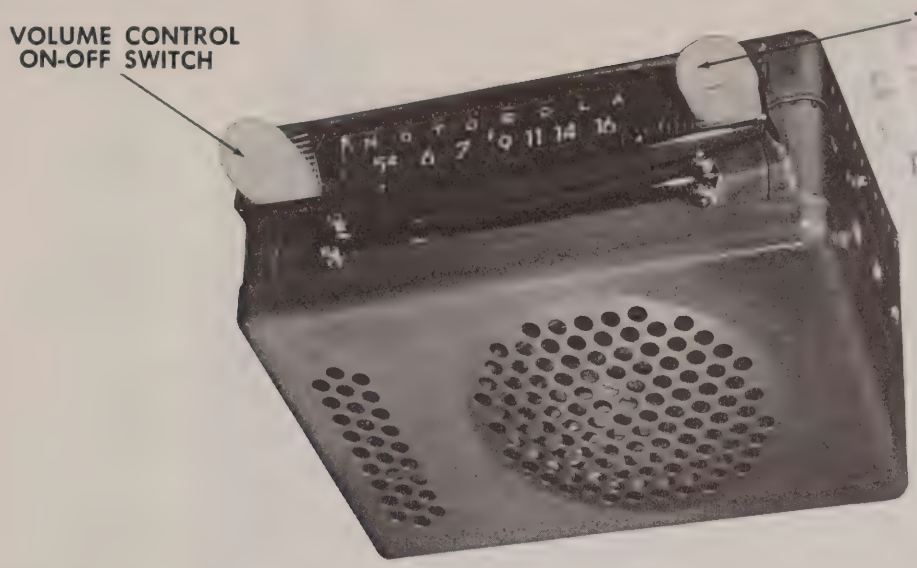
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



MOTOROLA
MODEL 412

TRADE NAME	Motorola Model 412
MANUFACTURER	Motorola Inc., 4545 Augusta Blvd., Chicago 51, Ill.
TYPE SET	Battery Operated Universal Automobile AM Superheterodyne Receiver
TUBES (Six)	Types 12BD6 RF Amp., 12BE6 Conv., 12BD6 IF Amp., 12AT6 Det.-AVC-AF Amp., 12AQ5 Audio Output, 12X4 Rectifier
POWER SUPPLY	12 Volt Storage Battery — RATING 2.8 Amp. @ 12.6 Volts DC
TUNING RANGE—BROADCAST	540-1605 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis.	455KC (400~Mod)	High frequency end of dial	Across voice coil	A1, A2, A3, A4	Adjust in order given for maximum output.
2.	Fig. 1	Thru dummy to antenna receptacle.	1605KC	"	"	A5	Adjust for maximum output.
3.	"	"	1400KC	Tune to 1400KC signal	"	A6, A7	"
	The following adjustments should be made only if tuner components have been replaced or tampered with.						
4.	Fig. 1	Thru dummy to antenna receptacle	1610KC	Tune to high frequency end stop. Cores should project 1 1/32" from end of coil form. Adjust if necessary.	Across voice coil	A5, A6, A7	Adjust in order given for maximum output.
5.	"	"	1400KC	1400KC (See Fig. 2)	"	A8, A9, A10	"
	Install receiver in car, fully extend antenna and peak A7 for maximum volume on weak signal near 1400KC.						

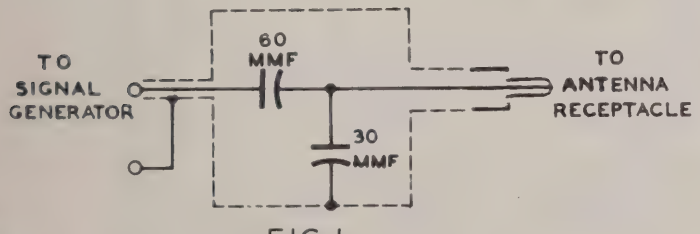


FIG. 1

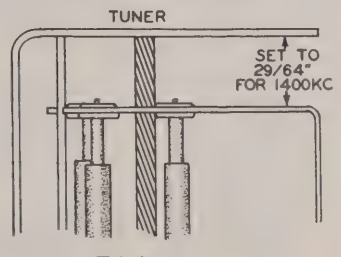


FIG. 2

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		MOTOROLA PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	12BD6	12BD6	7BK	
V2	Converter	12BE6	12BE6	7CH	
V3	IF Amplifier	12BD6	12BD6	7BK	
V4	Det.-AVC-AF Amp.	12AT6	12AT6	7BT	
V5	Audio Output	12AQ5	12AQ5	7BZ	
V6	Rectifier	12X4	12X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	■15	350	23A485677	AFH3-104		CO77		FP328	TVL-3630	
B	▲10	350								
C	20	25								
C2	90		21A591682							
C3	.006	100	8A4529	P285-006	D6-562	PJ6D6	GP2-333-602	PT626	68P12	
C4	5		21K70720	SI5NP0	TCZ-4.7		NP0K-050	ZT-555	5TCCB-V47	
C5	47		21R115593	SI47N750	TCN-47		N750K-470	NT-5447	5TCU-Q47	
C6	.05	400	8R14791	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C7	.05	100	8R13514	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C8	.01	100	8R472754	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C9	.01	400	8R23690	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C10	470		21K481377	SI470	D6-471	TM5T1	GP2K-471	UC-5347	5GA-T47	
C11	.004	400	8K71909	P688-004	D6-402	PTE6D4	GP2-333-402	PT624	6TM-D4	
C12	.03	1000	8K400883	VBC-33		PTE16S3		PT1613	MB-S3	
V13	.5	100	8K17028	VHC-36		PJ2P5		RF480	68P20	
V14	.5	100	8K17028	VHC-36		PJ2P5		RF480	68P20	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	18K501294	Q13-133	AG-60-Z	B-60-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A

RESISTORS

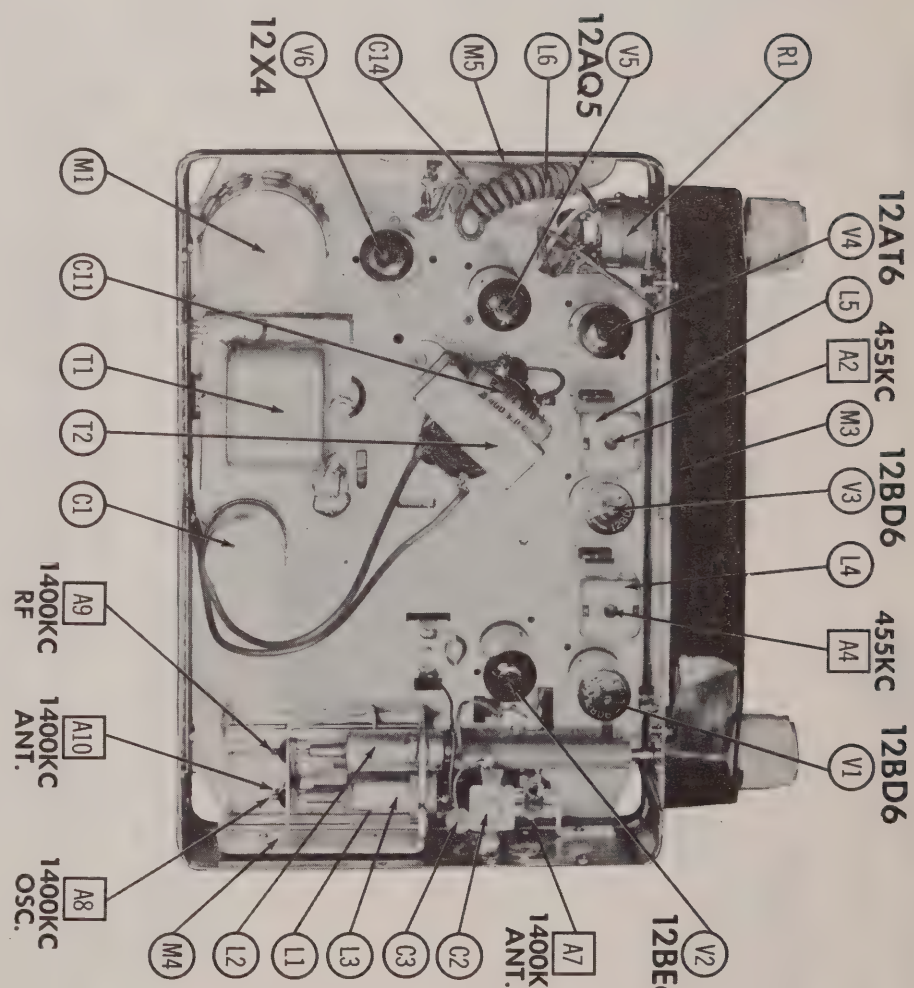
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MOTOROLA PART No.	IRC PART No.	
R2	1Meg	½	6R6004	BTS-1Meg	
R3	220Ω	½	6R6270	BTS-220	
R4	100KΩ	½	6R6075	BTS-100K	
R5	47KΩ	½	6R6056	BTS-47K	
R6	330Ω	½	6R6022	BTS-330	
R7	6800Ω	2	6R5690	BTB-6800	
R8	1Meg	½	6R6004	BTS-1Meg	
R9	4.7Meg	½	6R2122	BTS-4.7Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MOTOROLA PART No.	IRC PART No.	
R10	470KΩ	½	6R6032	BTS-470K	
R11	270KΩ	½	6R6414	BTS-270K	
R12	270Ω	1	6R6336	BTA-270-	
R13	2200Ω	2	6R5687	BTB-2200	
R14	220Ω	1	6R6389	BTA-220	
R15	220Ω	1	6R6389	BTA-220	
R16	22Ω	2	6R2009		

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	12VAC @1.4A	376VCT .039ADC			25C521841				

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		MOTOROLA PART No.	STANCOR PART No.	MERIT PART No	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T2	5.2KΩ	3.2Ω	484Ω	.54Ω	25B70171-N	A-3877	A-2930	RO-9	S-3X	

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5 1/4"	PM	3.2Ω	50K521882	ST-803 Mod. P525-V	52A1	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	MOTOROLA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	12.5Ω		24B502472				Less core, core part #46A502505
L2	RF Coil	13Ω		24B502473				Less core, core part #46A502505
L3	Osc. Coil	.3Ω	3.4Ω	24B502474				Less core, core part #46A502505
L4	Input IF	17Ω	17Ω	24C485553	16-6758	BC-352	12-C1	
L5	Output IF	17Ω	17Ω	24K485554	16-6770	BC-355	12-C6	
L6	Fil. Choke	0Ω		24K580706				
L7	Vibrator Hash Choke	.1Ω		24A521816			5221	18 Microhenries

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				NOTES
				MOTOROLA PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Interrupter	12V.	115∿	48B522000	6326	G859	6326	

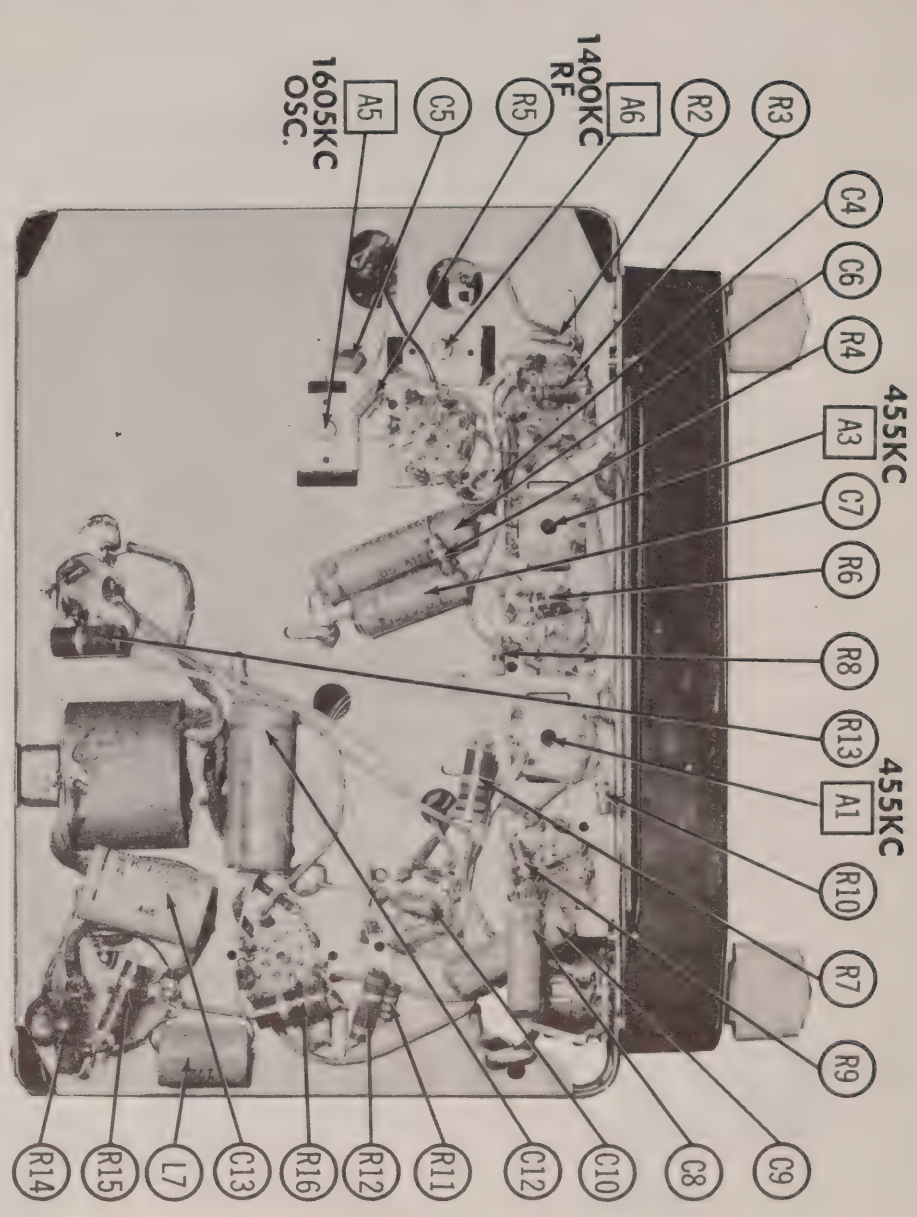
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MOTOROLA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	SFE	9A	65K16248	9K592648 (with lead & fuse)	307009	155009	SFE9	HRH (with lead & fuse)

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M3	Dial Light	65X10867	Type #44
M4	Tuning Unit	51D502490	Complete
M5	Spark Plate Assy.	1V500379	
A7	Trimmer Cap.	20A502338	50-280MMF, antenna
A6	Trimmer Cap.	20A481526	20-180MMF, RF
A5	Trimmer Cap.	20A485708	395-470MMF, Oscillator
	Cover (Top)	15K521854	
	Cover (Bottom)	15K521856	(less speaker)
	Escutcheon (Dial)	13D521747	
	Dial Background	64K521818	
	Scale	34K502385	
	Pointer Assy.	1A501293	
	Knob	36K521779	Off/On Volume and tuning (2 used)

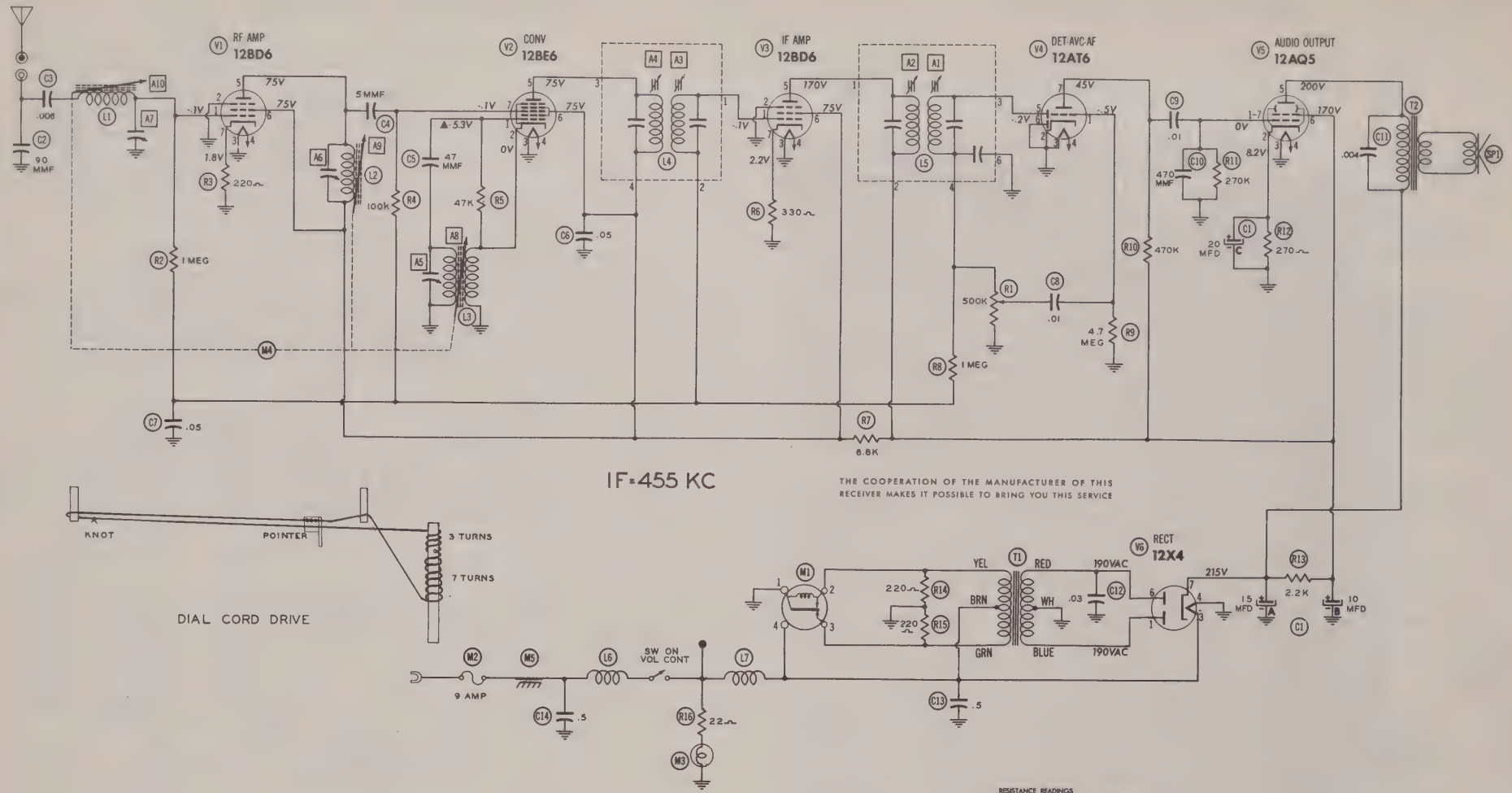
CHASSIS—BOTTOM VIEW



SET 215 FOLDER 10

MOTOROLA MODEL 412

MOTOROLA MODEL 412



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BD6	2.5Meg	0Ω	0Ω	1.3Ω	†9KΩ	†9KΩ	220Ω
V 2	12BE6	47KΩ	.3Ω	0Ω	1.3Ω	†9KΩ	†9KΩ	1.6Meg
V 3	12BD6	1.5Meg	0Ω	0Ω	1.3Ω	†2.2KΩ	†9KΩ	330Ω
V 4	12AT6	4.7Meg	0Ω	0Ω	1.3Ω	500KΩ	0Ω	†470KΩ
V 5	12AQ5	270KΩ	270Ω	0Ω	1.3Ω	†484Ω	†2.2KΩ	270KΩ
V 6	12X4	336Ω	6Ω	1.3Ω	0Ω	1.4Ω	314Ω	500KΩ

▲ TAKEN WITH VACUUM TUBE VOLTMETER.
† MEASURED FROM PIN 7 OF V6.

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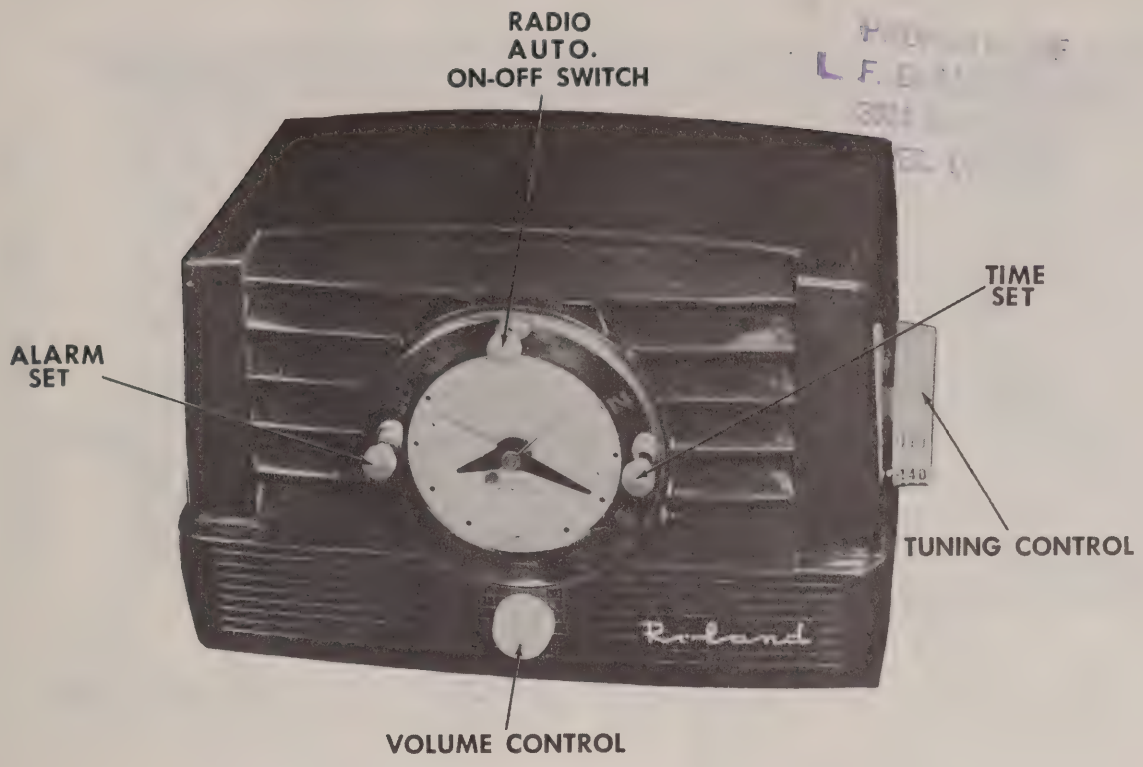
1. DC Voltage measurements are at 20,000 ohms per volt, AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 6.3 Volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% on voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



ROLAND
MODEL 5C1

ROLAND
MODEL 5C1

TRADE NAME	Roland Model 5C1
MANUFACTURER	Roland Radio Corp., 12-30 Anderson Ave., Mt. Vernon, N.Y.
TYPE SET	AC Operated AM Superheterodyne Receiver with Electric Clock
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AT6 Det.-AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles
RATING	.26 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	455KC (400%Mod)	Tuning gang fully open	Across voice coil	A1, A2	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1620KC	"	"	A3	"
3.		Loop	1400KC	Tune to 1400KC signal	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	600KC	Tune to 600KC signal	"		Check tracking at 600KC. If necessary slightly bend outer rotor plates of antenna capacitor for optimum tracking.

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PARTS LIST AND DESCRIPTIONS

ROLAND
MODEL 5C1

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		ROLAND PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det.-AVC-AF Amp.	12AT6	12AT6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	ROLAND PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	40	150		PRS150/50-30-20		EDL44215		3N532	TVA-3448	Red
B	40	150								Red
C	20	150								Green
C2	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C3	5						N150K-050			
C4	180			SI180	D6-181	TM5T2	GP2K-181	UC-532	5GA-T18	
C5	180			SI180	D6-181	TM5T2	GP2K-181	UC-532	5GA-T18	
C6	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C7	180			SI180	D6-181	TM5T2	GP2K-181	UC-532	5GA-T18	
C8	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C9	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C10	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C11	.1	400		P488-1		PTE4P1		PT401	4TM-P1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ROLAND PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	VC-52	Q13-133	AG-60-Z	BSK-60	U-48	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A

RESISTORS

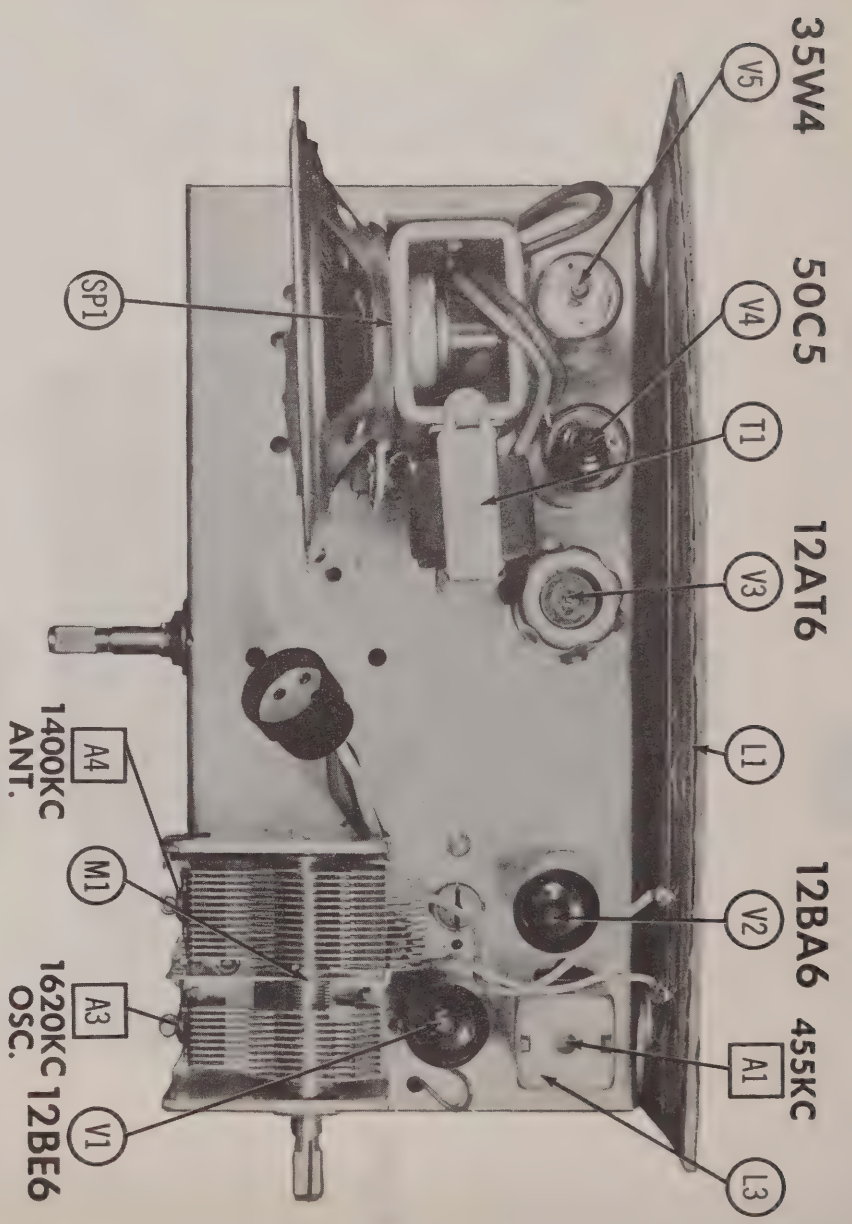
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ROLAND PART No.	IRC PART No.	
R2	22KΩ	½		BTS-22K	
R3	2.2Meg	½		BTS-2.2Meg	
R4	5000Ω	½			
R5	68KΩ	½		BTS-68K	
R6	4.7Meg	½		BTS-4.7Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ROLAND PART No.	IRC PART No.	
R7	220KΩ	½		BTS-220K	
R8	470KΩ	½		BTS-470K	
R9	150Ω	1		BTA-150	
R10	18Ω	½			
R11	1500Ω	1		BTA-1500	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		ROLAND PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2.6KΩ	3.3Ω	200Ω	.8Ω		A-3332 ①	A-3025 ①			① Bend mounting tabs down, file out slots, mount on original mounting bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	ROLAND PART No.	VIKING PART No.	QUAM PART No.	
SP1	3½"	PM	3.3Ω		3574	3A07	

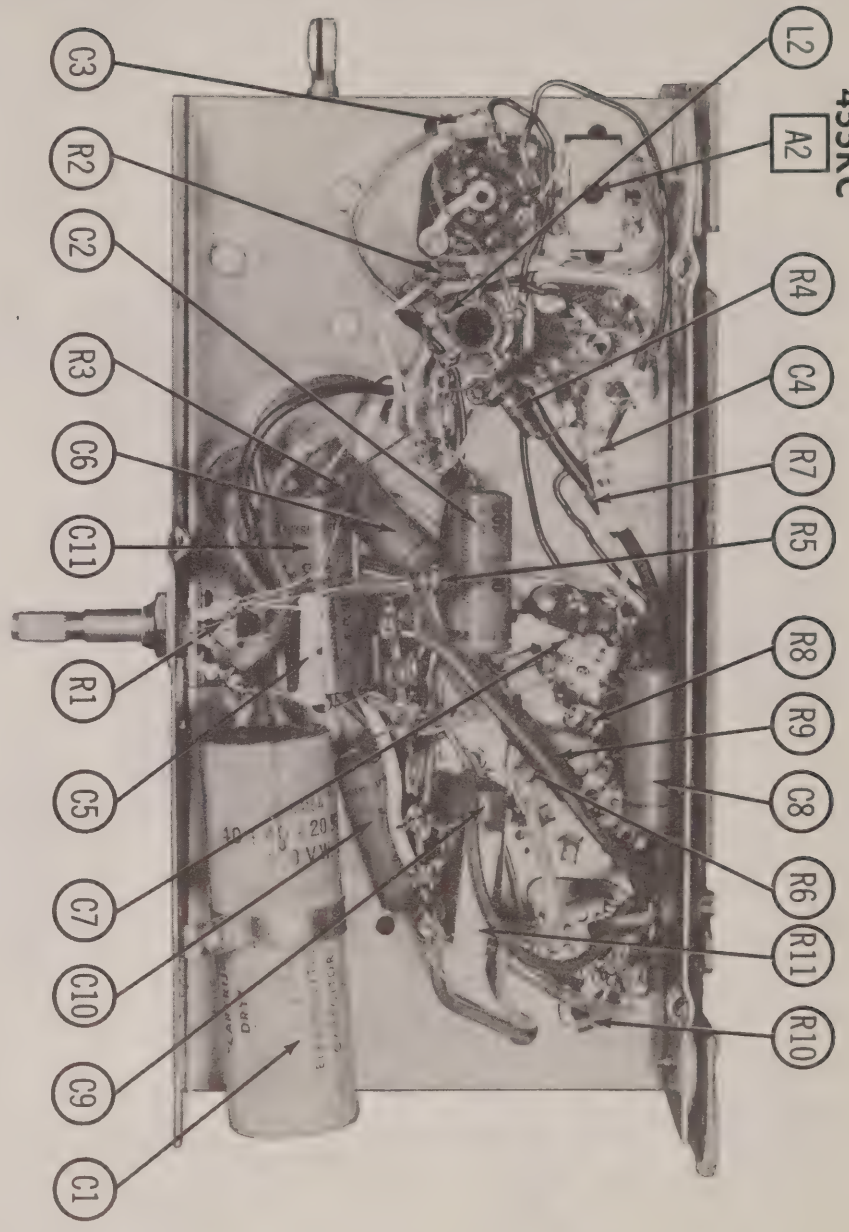
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	ROLAND PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	3Ω		LP514				
L2	Osc. Coil	.5Ω	5.5Ω		14-1073			
L3	IF Trans.	21Ω	20Ω	LF-24	16-6758	BC-352	12-C1	

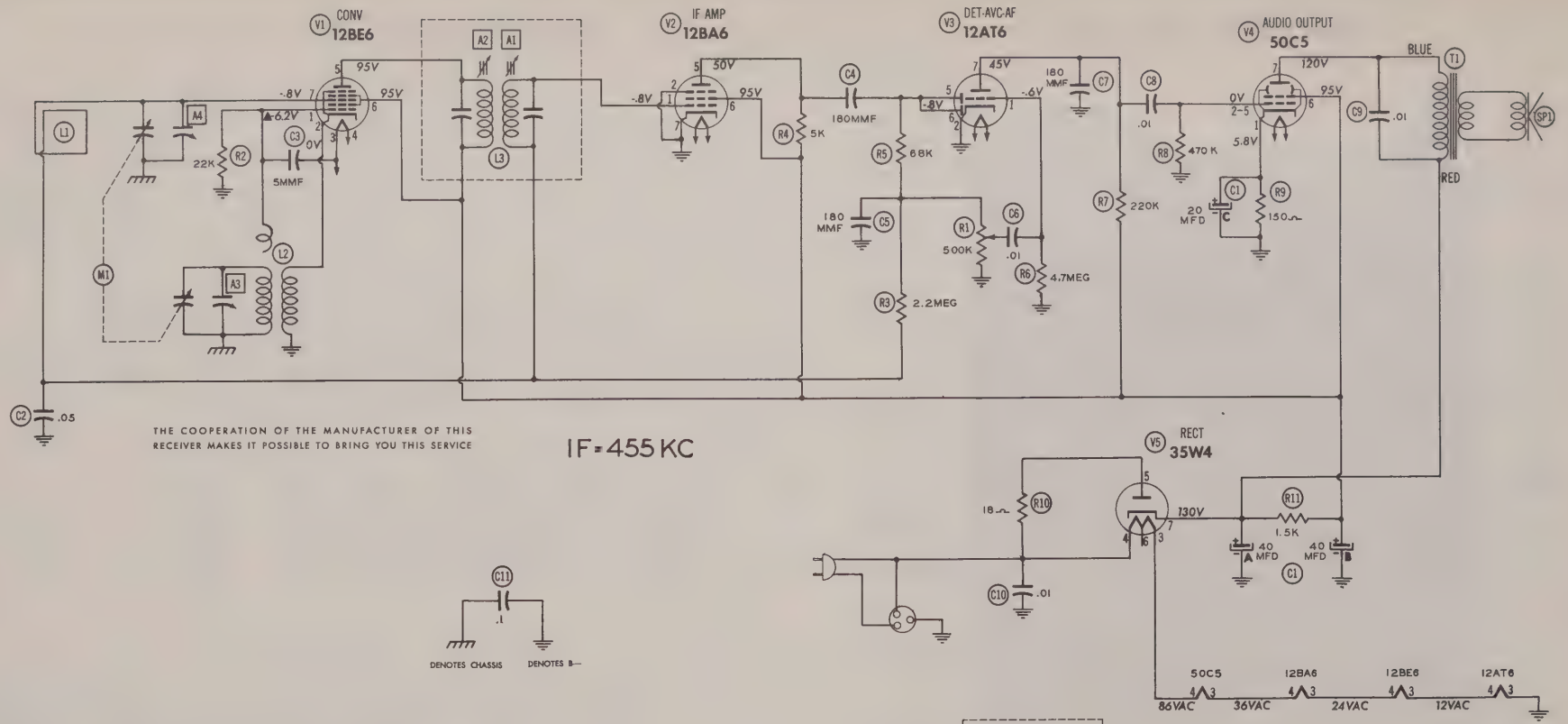
MISCELLANEOUS

ITEM No.	PART NAME	ROLAND PART No.	NOTES
M1	Tuning Capacitor	CV-21A	35-452MMF, 25-185MMF

CHASSIS—BOTTOM VIEW



ROLAND MODEL 5C1



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.5Ω	12Ω	24Ω	†1.5KΩ	†1.5KΩ	2.7Meg
V 2	12BA6	2.7Meg	0Ω	24Ω	36Ω	†6.5KΩ	†1.5KΩ	0Ω
V 3	12AT6	4.7Meg	0Ω	0Ω	12Ω	570KΩ	570KΩ	†220KΩ
V 4	50C5	150Ω	470KΩ	36Ω	86Ω	470KΩ	†1.5KΩ	†200Ω
V 5	35W4	INF	INF	86Ω	117Ω	140Ω	110Ω	80KΩ

† MEASURED FROM PIN 7 OF V5
▲ TAKEN WITH VACUUM TUBE VOLTMETER

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

SILVERTONE MODELS 1035,
A, 2035A, 3035A (Ch. 528.195, -1, -2)

SILVERTONE MODELS 1035,
A, 2035A, 3035A (Ch. 528.195, -1, -2)

TRADE NAME	Silvertone Models 1035 (Ch. 528.195), 1035A (Ch. 528.195-1), 2035A, 3035A (Ch. 528.195-2)
SUPPLIER	Sears, Roebuck & Co., 925 So. Homan, Chicago, Ill.
TYPE SET	AC Operated Radio-Phono Combination Superheterodyne Receiver with 3 Speed Manual Record Player
TUBES (Five)	Types 12SA7 Conv., 12SK7 IF Amp., 12SQ7 Det.-AVC-AF Amp., 50L6GT Audio Output, 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles — RATING .27 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1630 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 8 (grid) of 12SA7(V1). Low side to B-.	455KC (400%Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1630KC	"	"	A5	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation. If range of A5 is insufficient adjust trimmer at opposite end of stator plates.
3.		Loop	1400KC	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

Replace receiver in cabinet, turn tuning capacitor fully open and set the dial so that the "1" in "160" is aligned with the index mark on the cabinet.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		Silvertone PART No.	STANDARD REPLACEMENT		
V1	Converter	12SA7	12SA7	8R	
V2	IF Amplifier	12SK7	12SK7	8N	
V3	Det.-AVC-AF Amp.	12SQ7	12SQ7	8Q	
V4	Audio Output	50L6GT	50L6GT	7S	
V5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Silvertone PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	50	150	T18-304	PRS150/50-30		EDL5315		2N520	TVA-2450	Red Yellow
C2	.05	200	T16-197	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	47		T15-229	SI47N750	TCN-47		N750K-470	NT-5447	5TCC-Q47	
C4	.05	200	T16-197	P288-05	DF-503	PJ2S5		PT415	2TM-S5	Note 1
C5A	220		T17-104	SI220	D6-221		GP2K-221	UC-5322	34C3	
B	.002			BPD-002	DD-202	TM5D2	811-002	DC-522		
C	220			SI220	D6-221		GP2K-221	UC-5322		
D	.005			BPD-005	MD-502	TM5D5	811-005	DC-525		
C6	.02	400	T16-150	P488-02	DF-203	PTE4S2		PT412	4TM-S2	
C7	.005	600	T16-190	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C8	.005	600	T16-190	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C9	.05	400	T16-189	P488-05		PTE4S5		PT415	4TM-S5	
C10	.05	400	T16-189	P488-05		PTE4S5		PT415	4TM-S5	
C11	.05	400	T16-189	P488-05		PTE4S5		PT415	4TM-S5	

Note 1. Used in Ch. 528.195-2 only.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Silvertone PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	1Meg	½	A24-195	Q13-137	AG-63-Z	BSK-70-S	U-53	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A
R2A	1Meg	½	A26-127	Q11-137	AG-61-S	AB-69	U-54	Tone
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R2A

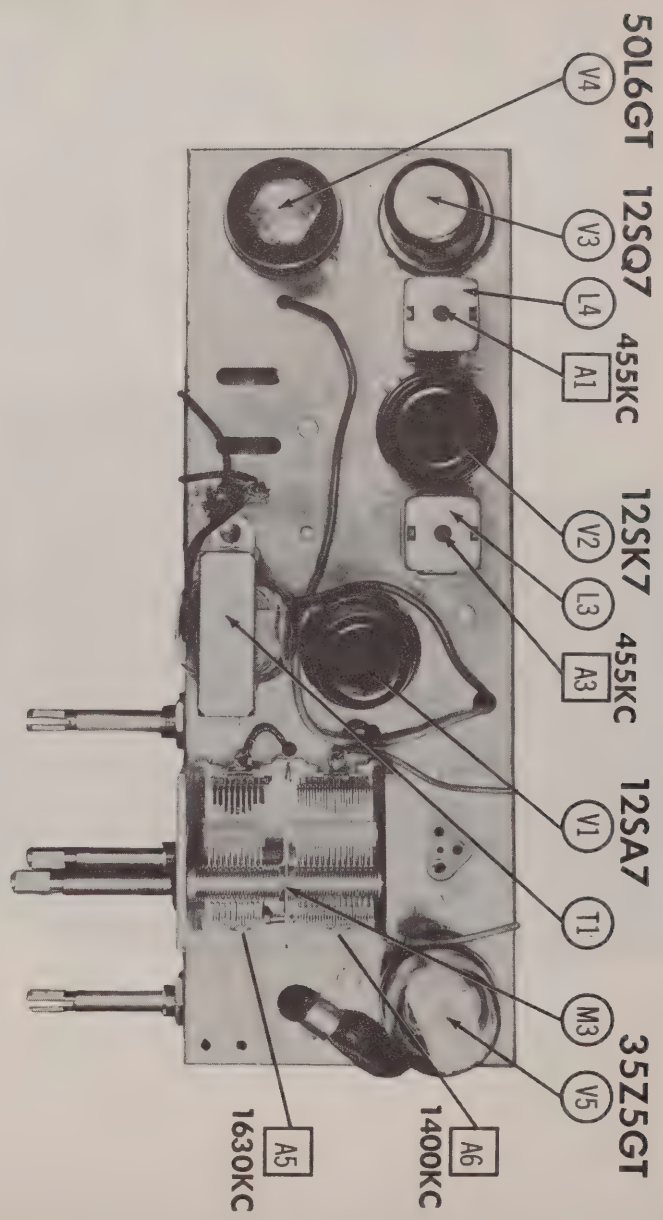
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Silvertone PART No.	IRC PART No.	
R3	22KΩ	½	T60-659	BTS-22K	Note
R4	2.2Meg	½	T60-726	BTS-2.2Meg	
R5	2.2Meg	½	T60-726	BTS-2.2Meg	
R6	47KΩ	½	T60-730	BTS-47K	
R7	470KΩ	½	T60-731	BTS-470K	
R8	10Meg	½	T60-728	BTS-10Meg	

Note: Used only in Ch. 528.195-2.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Silvertone PART No.	IRC PART No.	
R9	220KΩ	½	T60-667	BTS-220K	
R10	470KΩ	½	T60-731	BTS-470K	
R11	180Ω	½	T60-774	BTS-180	
R12	1000Ω	1	T60-732	BTS-1000	
R13	27Ω	½	T60-690		

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		Silvertone PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2.5KΩ	3.2Ω	218Ωtap @ 9Ω	.58Ω	80-268	A-3336	A-3031 ①	RO-3		① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	Silvertone PART No.	VIKING PART No.	QUAM PART No.	
SP1	4 x 6"	PM	3.2Ω	79-392	46J6	46A1	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	Silvertone PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	3Ω		T82-70				
L2	Osc. Coil	1.4Ω	7.5Ω	T10-572			70-Osc. *	
L3	Input IF	21Ω	21Ω	T10-508	16-6758	BC-352	12-C1	
L4	Output IF	21Ω	22Ω	T10-479	16-6758	BC-353	12-C2	

* Disregard tap on secondary winding.

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	Silvertone PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	T83-702					43	0-2	

ELECTRO-VOICE NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

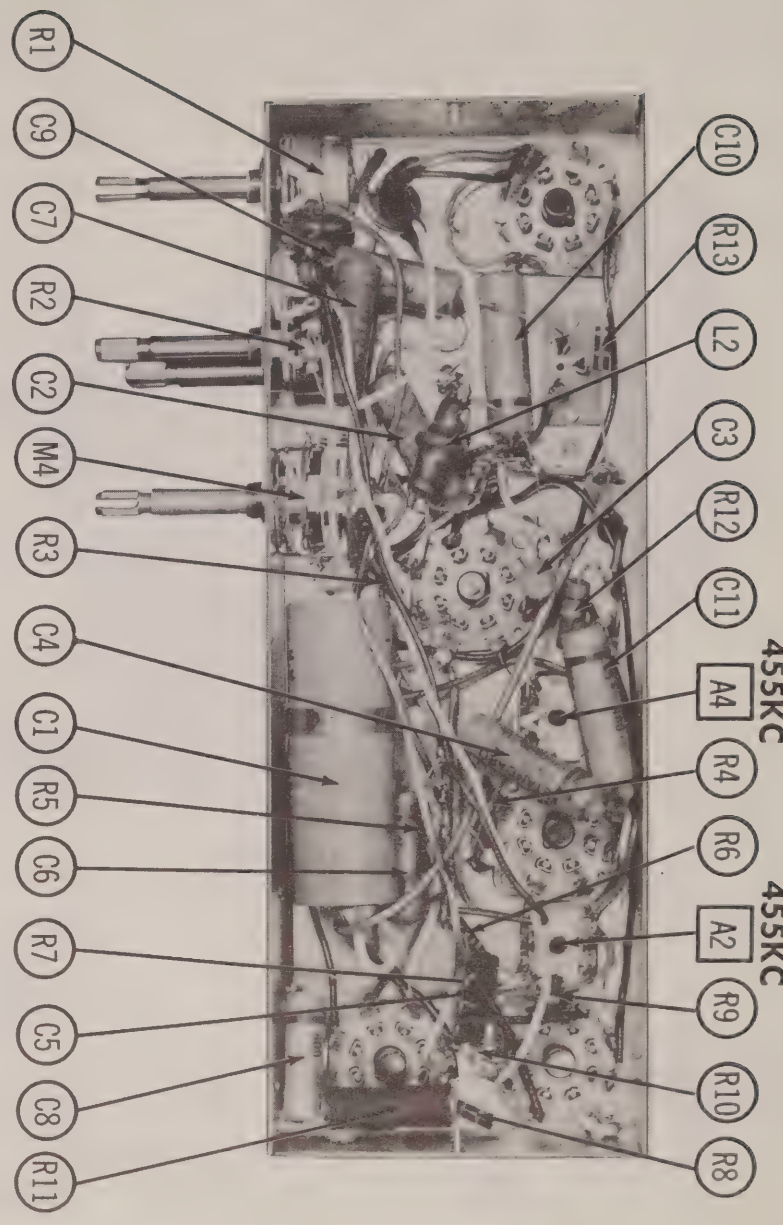
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	Silvertone PART No.	WALCO PART No.	JENSEN PART No.	
M2	T83-703	W-3AGA or W-3AGS	S-642 or S-652	

MISCELLANEOUS

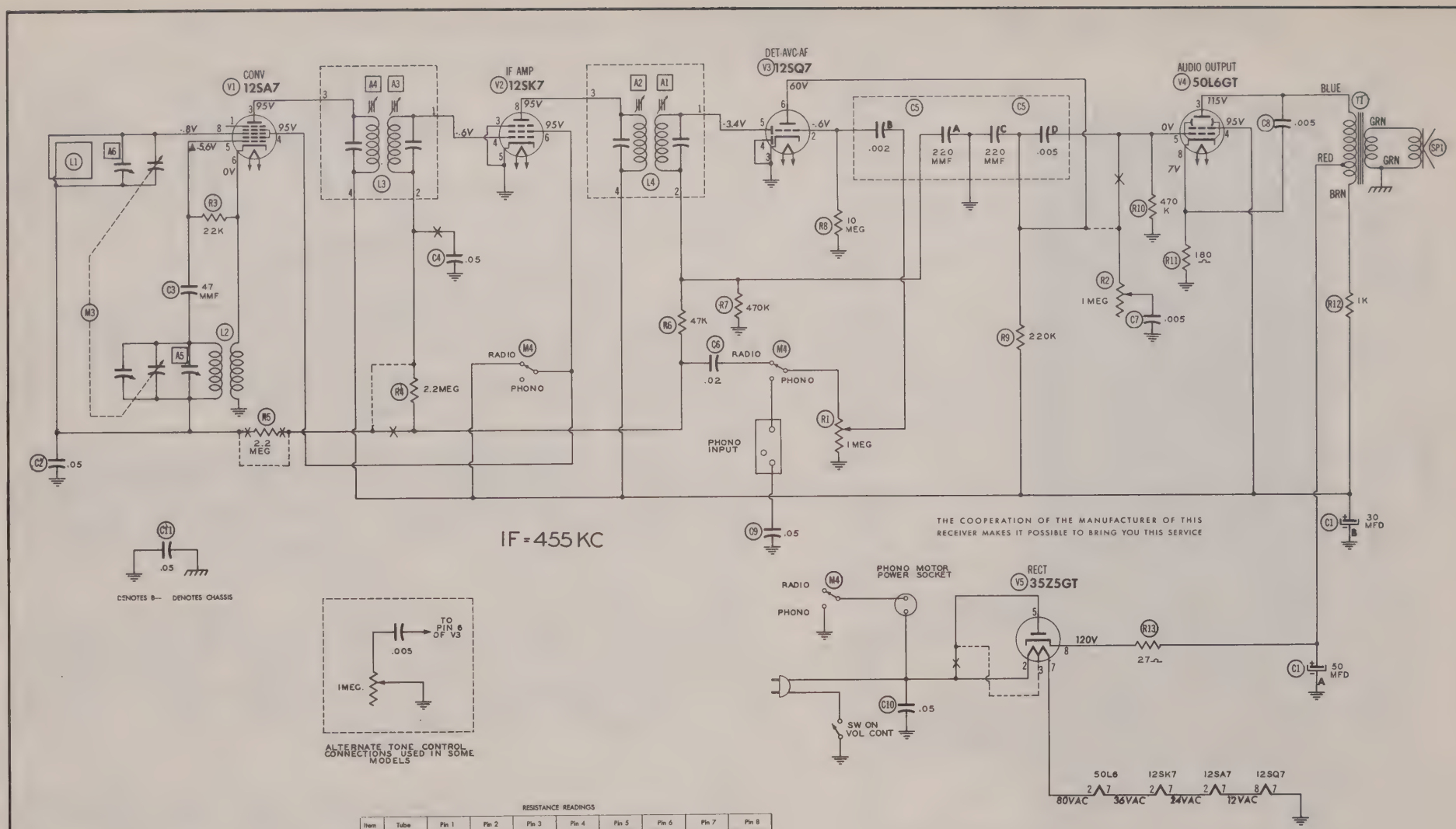
ITEM No.	PART NAME	Silvertone PART No.	NOTES
M3	Tuning Capacitor	T19-214	35-467, 32-200MMF (Models 2035A, 3035A, 1035, 1035A)
M4A	Switch	T69-190	Model 1035
B	Switch	T69-189	Model 1035A
	Cabinet	T42-488	Models 1035, 1035A
	Cabinet	T42-542	Model 2035A (Grey Oxhide)
	Cabinet	T42-566	Model 3035A (Wood Leatherette)
	Knob	T52-322	Tuning
	Knob	T52-323	Volume, Off/On
	Knob	T52-327	Tone
	Knob	T52-328	Radio-Phone

CHASSIS—BOTTOM VIEW



SILVERTONE MODEL 1035 (Ch. 528.195)

SILVERTONE MODEL 1035 (Ch. 528.195)



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7	INF	24Ω	†1KΩ	†1KΩ	22KΩ	1.4Ω	12Ω	2.7Meg
V 2	12SK7	INF	36Ω	0Ω	2.7Meg	0Ω	†1KΩ	24Ω	†1KΩ
V 3	12SQ7	INF	10Meg	0Ω	0Ω	470KΩ	†220KΩ	0Ω	12Ω
V 4	50L6	INF	80Ω	†245Ω	1KΩ	470KΩ	0Ω	36Ω	180Ω
V 5	35Z5	INF	117Ω	108Ω	INF	117Ω	INF	80Ω	750KΩ

MEASURED IN "RADIO" POSITION.
† MEASURED FROM PIN 7 OF V5.
▲ TAKEN WITH VACUUM TUBE VOLTMETER.

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PROPERTY OF
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WEBCOR
MODELS 129-1, 129-2

WEBCOR
MODELS 129-1, 129-2

TRADE NAME	Webcor Models 129-1, 129-2
MANUFACTURER	Webster-Chicago, 5610 Bloomingdale Ave. , Chicago, Ill.
TYPE SET	AC Operated Phono Amplifier with 3 Speed Automatic Record Player
TUBES (Four)	Types 12AX7 Pre-amp.-Phase Inv., (2) 50L6GT Audio Output, 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING .61 Amp. @ 117 Volts AC

FOR SERVICE INFORMATION ON RECORD CHANGER UNIT, WEBSTER MODEL 126, SEE PHOTOFACT SET #208 - FOLDER 13.

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1953 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		WEBCOR PART No.	STANDARD REPLACEMENT		
V1	Phono Pre-Amp.-Phase Inverter	12AX7	12AX7	9A	
V2	Audio Output	50L6GT	50L6GT	7S	
V3	Audio Output	50L6GT	50L6GT	7S	
V4	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	WEBCOR PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	20	250		PRS250/20-20 PRS250/20		EDL2225 BR2025		3N539	TVA-2515 TVA-1508	
B	20	250								
C	20	250								
C2	.047	400		P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C3	.047	400		P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C4	.0022	400		P688-0022	D6-222	PTE6D22	GP2-333-222	PT6222	6TM-D22	
C5	.033	400		P688-033		PTE6S33		PT6133	6TM-S33	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	WEBCOR PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	1Meg	1/2	31P042	Q13-137	AG-63-Z	BSK-70-S	U-53	Tone
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A
R2A	1Meg	1/2	31P076	Q13-137	AG-63-Z	BSK-70	U-53	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R2A

RESISTORS

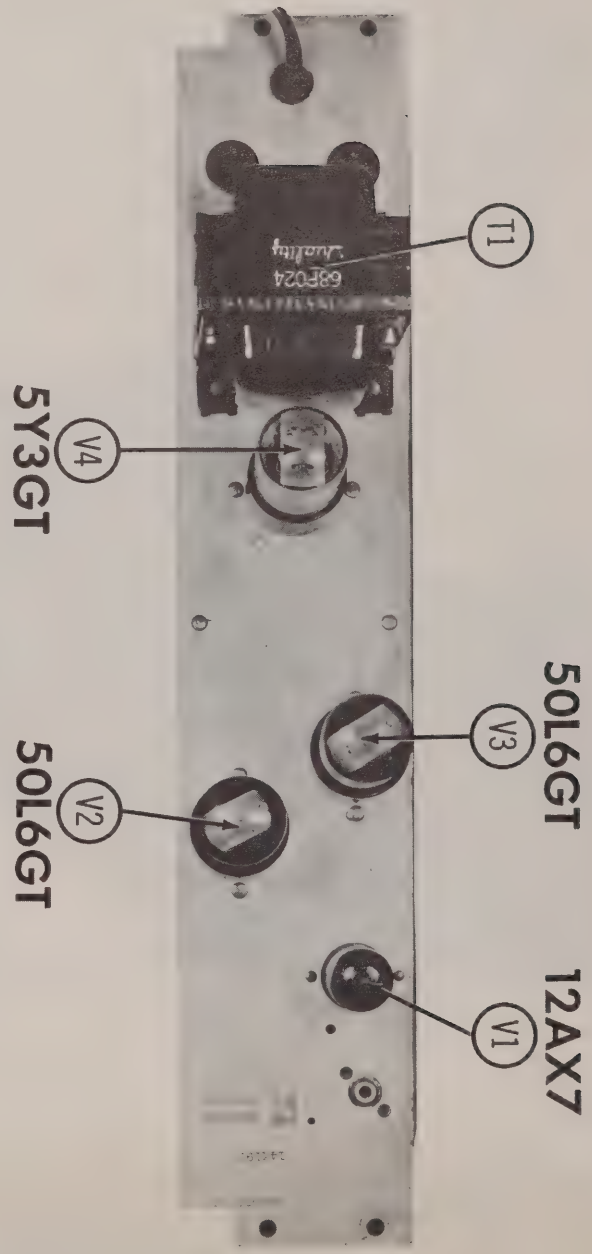
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	WEBCOR PART No.	IRC PART No.	
R3	1000Ω	1/2		BTS-1000	
R4	100KΩ	1/2		BTS-100K	
R5	3300Ω	1/2		BTS-3300	
R6	100KΩ	1/2		BTS-100K	
R7	100KΩ	1/2		BTS-100K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	WEBCOR PART No.	IRC PART No.	
R8	100KΩ	1/2		BTS-100K	
R9	33KΩ	1/2			
R10	120Ω	2		1 3/4A-7500	
R11	7500Ω	5			
R12	56Ω	1			

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	WEBCOR PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC @ .46A	452VCT .103ADC	5VAC @ 2A		68P024				

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		WEBCOR PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T2	5.1KΩ CT	3.4Ω	182Ω CT	.35Ω SEC. 2 9.2Ω CT	67P021					

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	WEBCOR PART No.	JENSEN PART No.	QUAM PART No.	
SP1	8"	PM	3.4Ω	76P024	ST-115 Mod. P8-V	8A21	

PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA							REMARKS
	WEBCOR PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1		ACD-C-J	A-1 A-3	WC24	A53MG A52A	96-0T	0-1 0-3	

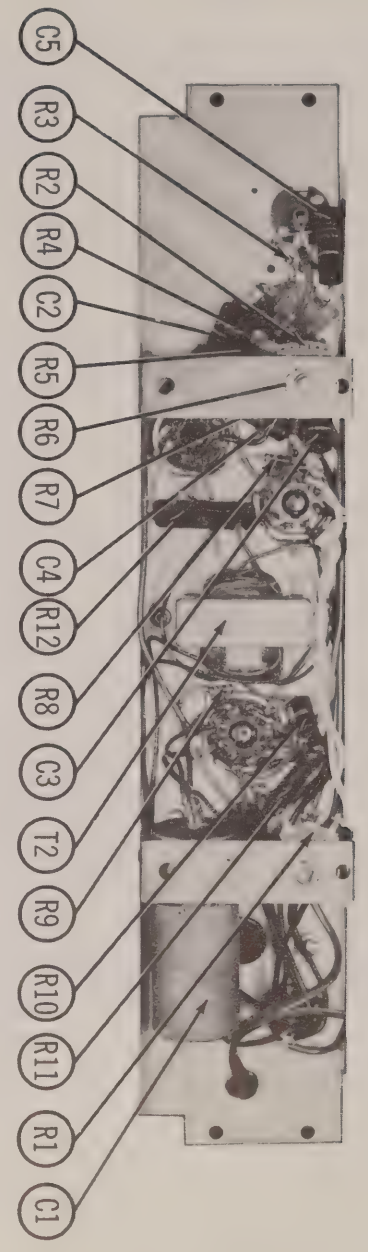
ASTATIC, SHURE AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

PHONO NEEDLE

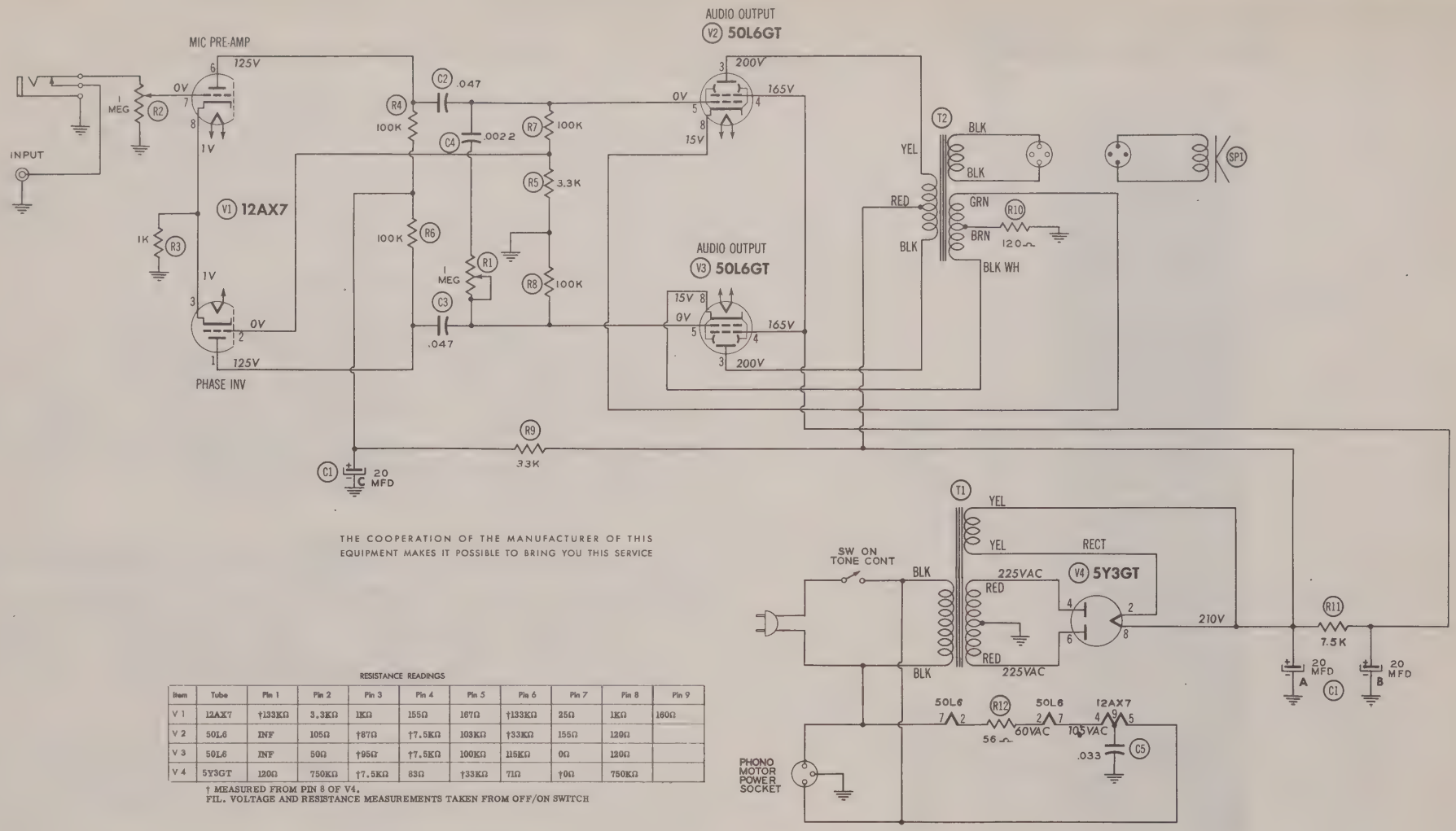
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	WEBCOR PART No.	WALCO PART No.	JENSEN PART No.	
M2		W-5MGA or W-5MGS & W-5A or W-5S	A75LP or A85LP & A-75 or A-85	

CHASSIS—BOTTOM VIEW



WEBCOR MODEL 129-1



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AX7	†133KΩ	3.3KΩ	1KΩ	155Ω	167Ω	†133KΩ	25Ω	1KΩ	160Ω
V 2	50L6	INF	105Ω	†87Ω	†7.5KΩ	103KΩ	†33KΩ	155Ω	120Ω	
V 3	50L6	INF	50Ω	†95Ω	†7.5KΩ	100KΩ	115KΩ	0Ω	120Ω	
V 4	5Y3GT	120Ω	750KΩ	†7.5KΩ	83Ω	†33KΩ	71Ω	†0Ω	750KΩ	

† MEASURED FROM PIN 8 OF V4.
FIL. VOLTAGE AND RESISTANCE MEASUREMENTS TAKEN FROM OFF/ON SWITCH

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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215-13

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

WESTINGHOUSE MODELS
H-382T5, H-383T5 (Ch. V-2157-10)

WESTINGHOUSE MODELS
H-382T5, H-383T5 (Ch. V-2157-10)

TRADE NAME	Westinghouse Model H-382T5, H-383T5 (Ch. V-2157-10)
MANUFACTURER	Westinghouse Elec tric Corp., TV-Radio Div., Sunbury, Pa.
TYPE SET	AC/DC Operated AM Superheterodyne Receiver
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det.-AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-DC — RATING .27 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	200MMF	High side to stator of antenna tuning capacitor. Low side to B-.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	"	"	1625KC	"	"	A5	"
3.		Loop	1400KC	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

WESTINGHOUSE
MODEL H-382T5 (Ch. V-2157-10)

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		Westinghouse PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det.-AVC-AF Amp.	12AV6	12AV6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Westinghouse PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	50	150	V-9991	PRS150/50-50		EDL5515		2N521	TVA-2453	Red Orange
B	50	150								
C2	.05	200	RCP10W2503M	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3A	220									
B	.002									
C	250		♦V-10789-2		♦PC-150		♦1408-01		♦103C4	
D										
E	.005									
C4	10000		R2CC63Z5Z103P	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C5	.047	400	V-10157-4473M	489ZX-05		PJ4S5		PT415	4TM-S5	
C6	.05	200	RCP10W4503M	P288-05		PJ2S5		PT415	2TM-S5	

♦ Items C3A, C3B, C3C, C3D, C3E, R4A, R4B, R4C are combined in one unit.
When replacing items separately C3C and C3D should total 250MMF.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Westinghouse PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	V-9993-8	Q13-133	AG-60-Z	BSK-60-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Westinghouse PART No.	IRC PART No.	
R2	22KΩ	½	RC20AE223M	BTS-22K	
R3	3.3Meg	½	RC20AE335M	BTS-3.3Meg	
R4A	6.8Meg	½		BTS-6.8Meg	
B	470KΩ	½	♦V-10789-2	BTS-470K	
C	470KΩ	½		BTS-470K	

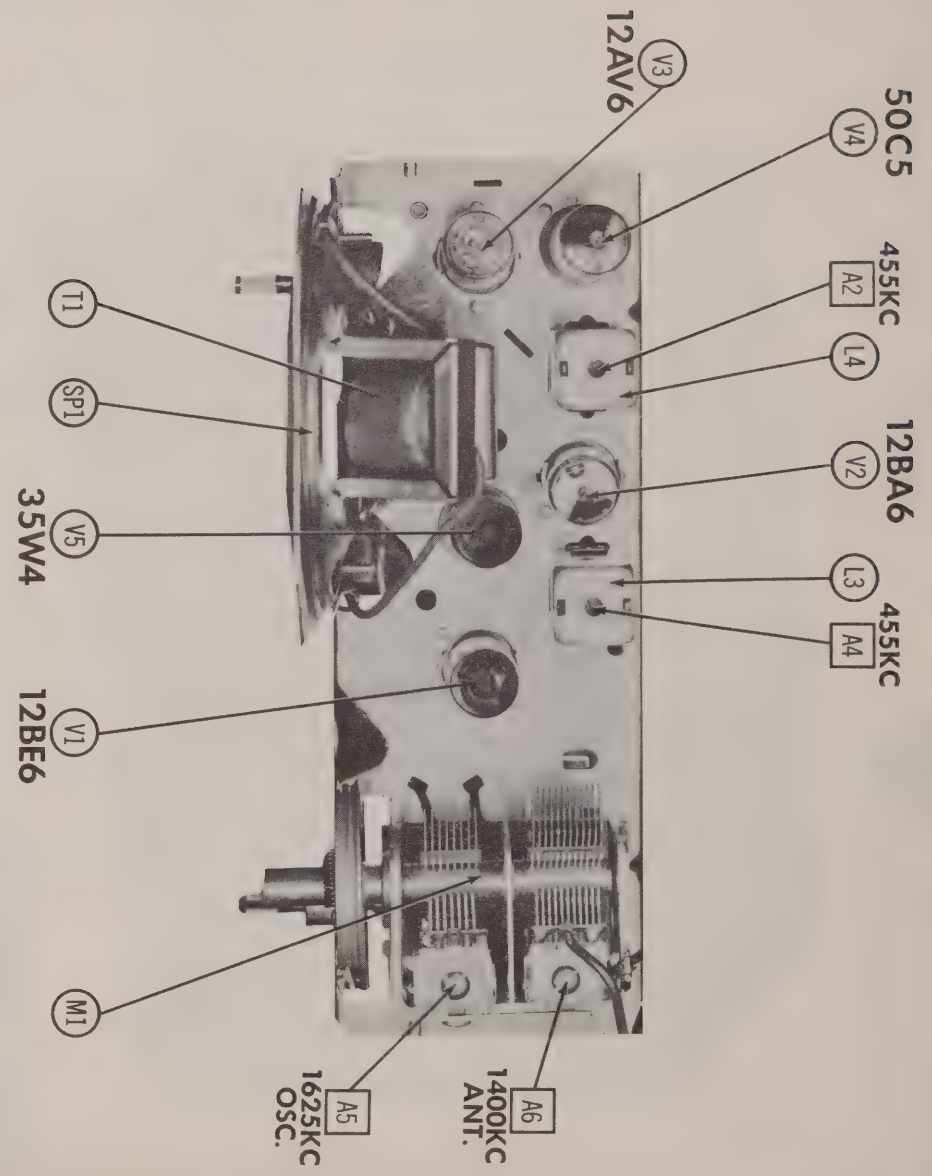
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Westinghouse PART No.	IRC PART No.	
R5	150Ω	½	RC20AE151M	BTS-150	
R6	1000Ω	1	RC30AE102M	BTA-1000	
R7	22Ω	1	RC30AE220M		

♦ Items R4A, R4B, R4C, C3A, C3B, C3C, C3D, C3E are combined in one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		Westinghouse PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2KΩ	3Ω	250Ω	.7Ω	Part of Spkr.	A-3332	A-3025	R0-2 ①	S-2X ①	① Drill one new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

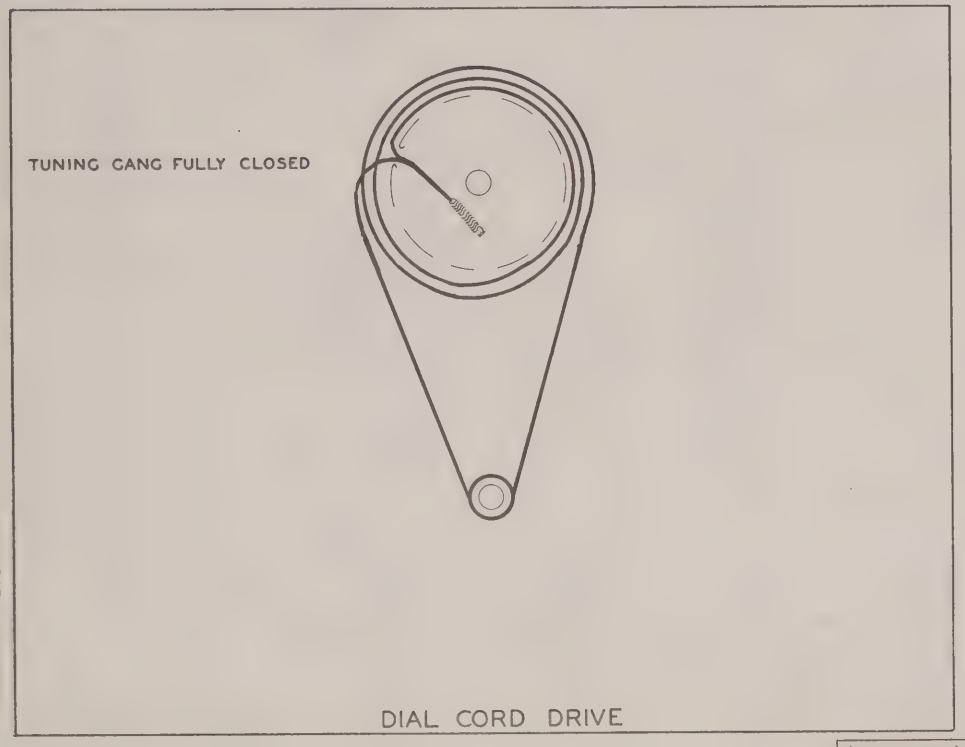
ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	Westinghouse PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3Ω	V-9727-2	ST-113 Mod. P4-X	4A07	

COILS (RF-IF)

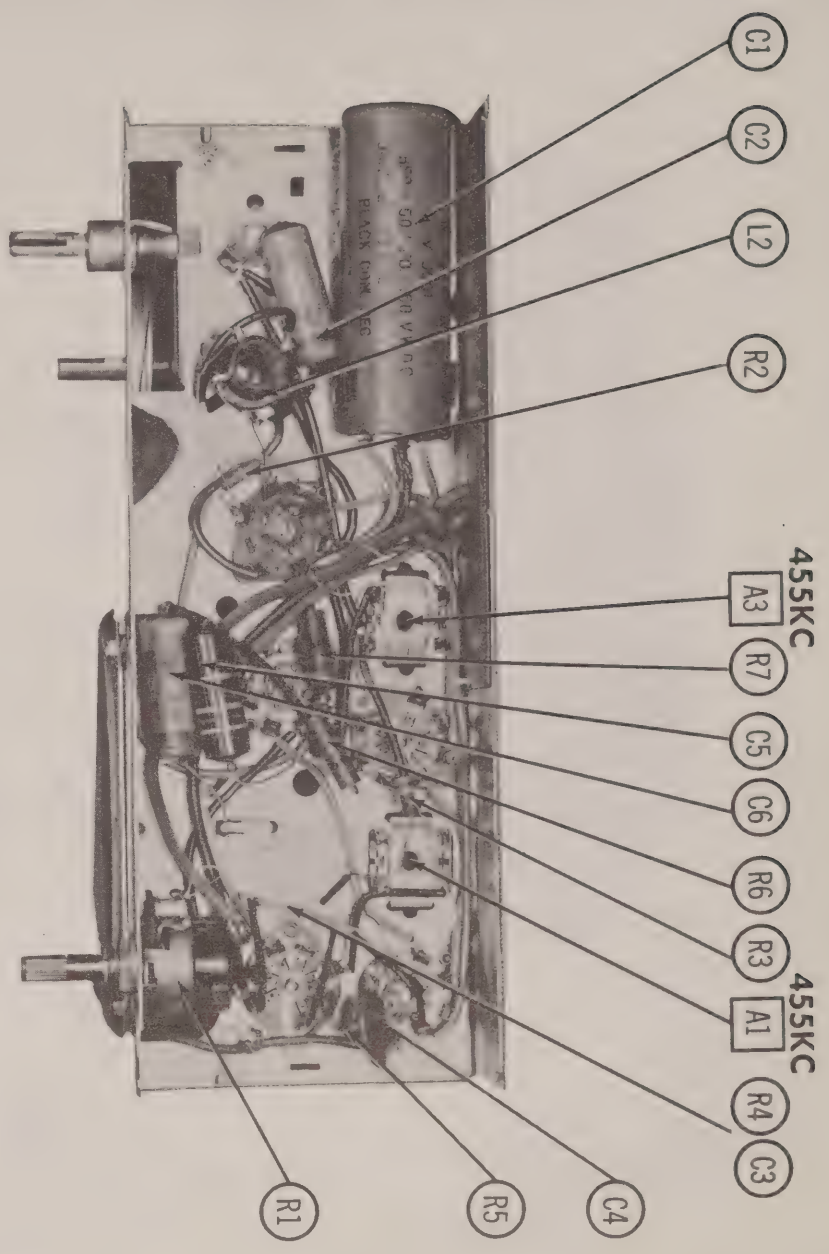
ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	Westinghouse PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	3.2Ω		V-11088-1				Includes cabinet back
L2	Osc. Coil	.8Ω	11Ω	V-9992			69-Osc.	
L3	Input IF	16Ω	16Ω	V-10945-1	16-6758	BC-352	12-C1	
L4	Output IF	16Ω	16Ω	V-10945-1	16-6758	BC-353	12-C2	

MISCELLANEOUS

ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M1	Tuning Capacitor	V-11502-1	26-390MMF, 20-112MMF
	Cabinet	V-1287-1	For Model H-382T5 (Brown)
	Cabinet	V-1287-2	For Model H-383T5 (Ivory)
	Knob	V-10009-17	For Model H-382T5 (Brown)
	Knob	V-10009-16	For Model H-383T5 (Ivory)

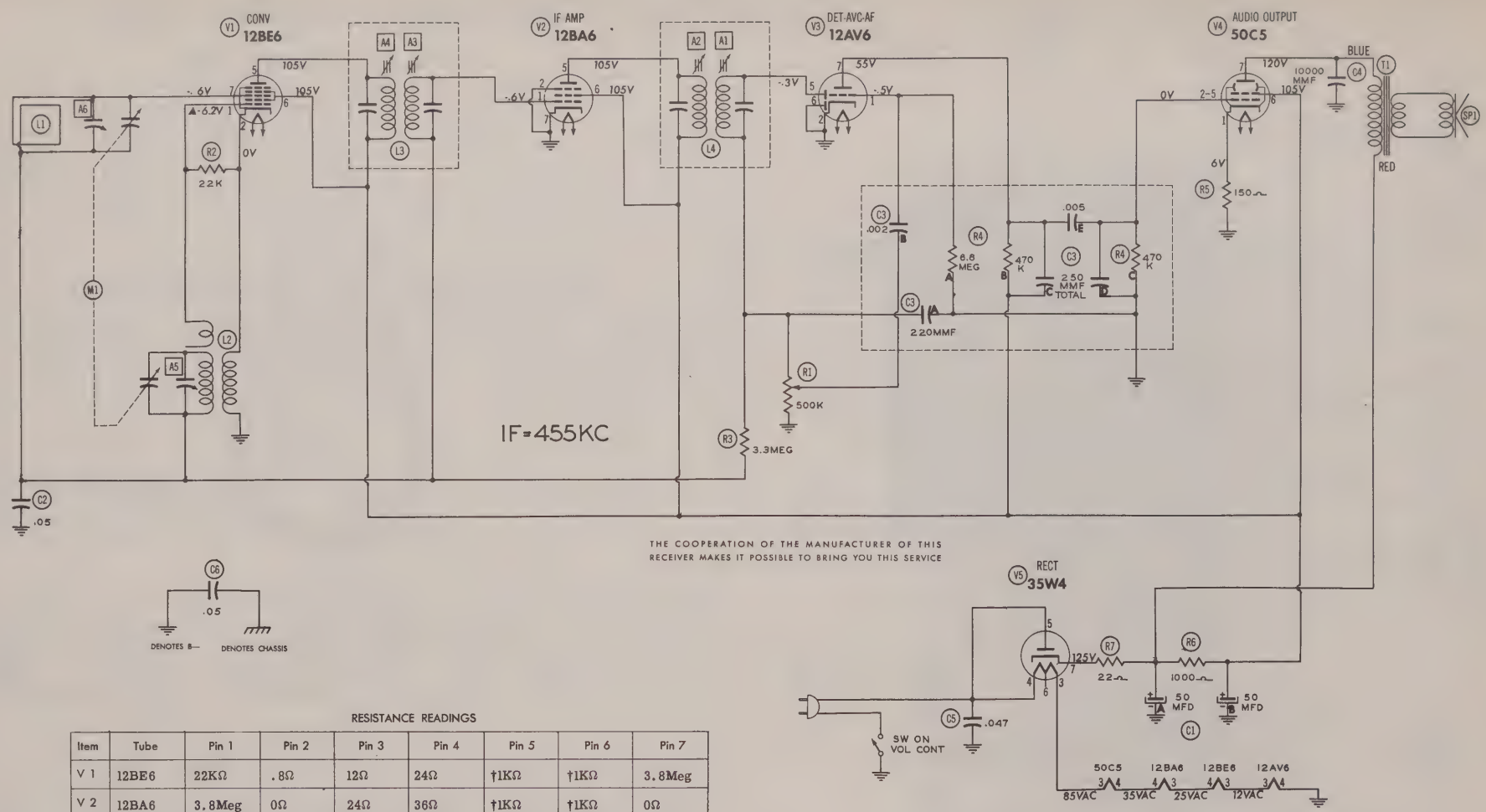


CHASSIS—BOTTOM VIEW



WESTINGHOUSE
MODEL H-382T5 (Ch. V-2157-10)

WESTINGHOUSE
MODEL H-382T5 (Ch. V-2157-10)



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.8Ω	12Ω	24Ω	†1KΩ	†1KΩ	3.8Meg
V 2	12BA6	3.8Meg	0Ω	24Ω	36Ω	†1KΩ	†1KΩ	0Ω
V 3	12AV6	6.8Meg	0Ω	12Ω	0Ω	500KΩ	0Ω	†470KΩ
V 4	50C5	150Ω	470KΩ	85Ω	36Ω	470KΩ	†1KΩ	†250Ω
V 5	35W4	†22Ω	0Ω	85Ω	117Ω	117Ω	INF	1.6Meg

▲ TAKEN WITH VACUUM TUBE VOLTMETER.
† MEASURED FROM PIN 7 OF V5.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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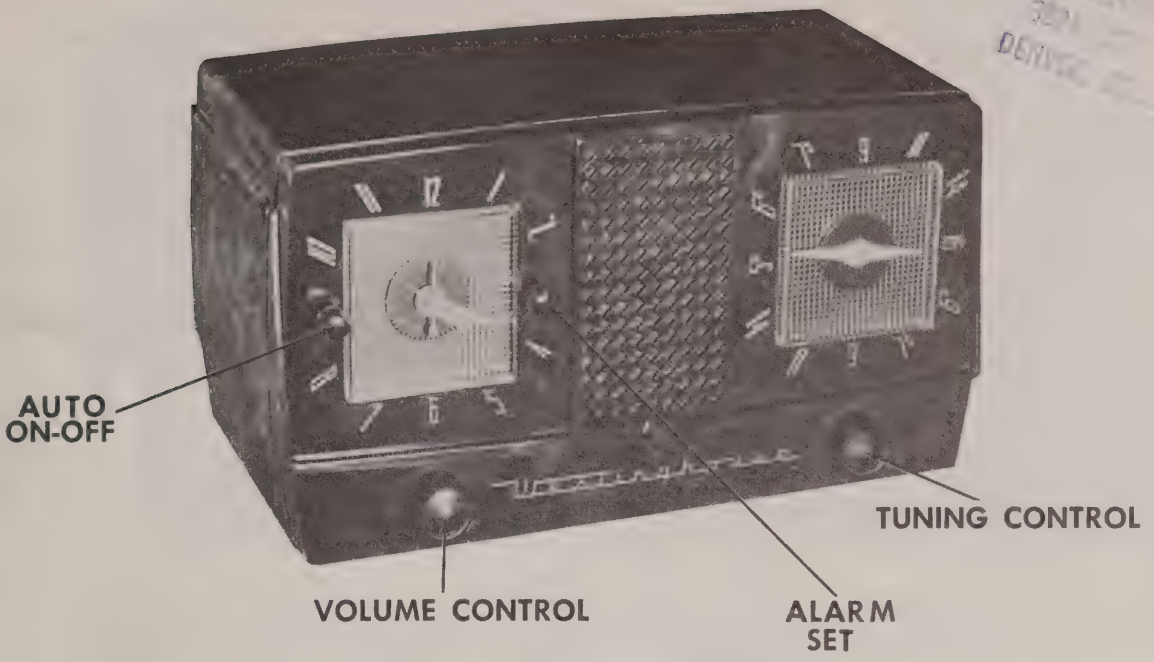
215-14

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PROPERTY OF
L. F. [illegible]
[illegible]
DENVER [illegible]

WESTINGHOUSE
MODEL H-388T5 (Ch. V-2157-12



WESTINGHOUSE
MODEL H-388T5 (Ch. V-2157-12

TRADE NAME	Westinghouse Model H-388T5 (Ch. V-2157-12)
MANUFACTURER	Westinghouse Electric Corp., TV-Radio Div., Sunbury, Pa.
TYPE SET	AC Operated AM Superheterodyne Receiver with Electric Clock
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det.-AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING .27 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
To set pointer, turn tuning capacitor fully closed and set pointer parallel with base of dial.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	200MMF	High side to stator of antenna tuning capacitor. Low side to B-.	455KC (400%Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	"	"	1625KC	"	"	A5	"
3.		Loop	1400KC	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

WESTINGHOUSE
MODEL H-388T5 (Ch. V-2157-12)

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		Westinghouse PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det.-AVC-AF Amp.	12AV6	12AV6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Westinghouse PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	50	150	V-9991	PRS150/50-50		EDL5515		2N521	TVA-2453	Red Orange
B	50	150								
C2	.05	200	RCP10W2503M	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3A	220		♦V-10789-1		♦PC-150		♦1408-01		♦103C4	
B	.005									
C	.005									
D	250									
E										
C4	.01	400	RCP10W4103M	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C5	.047	400	V-10157-4473M	489ZX-05		PJ4S5		PT4147	4TM-S47	
C6	.05	400	RCP10W4503M	P488-05		PTE4S5		PT415	4TM-S5	

♦ Items C3A, C3B, C3C, C3D, C3E, R5A, R5B, R5C are combined in one unit.
When replacing items separately C3D and C3E should total 250MMF.

CONTROLS

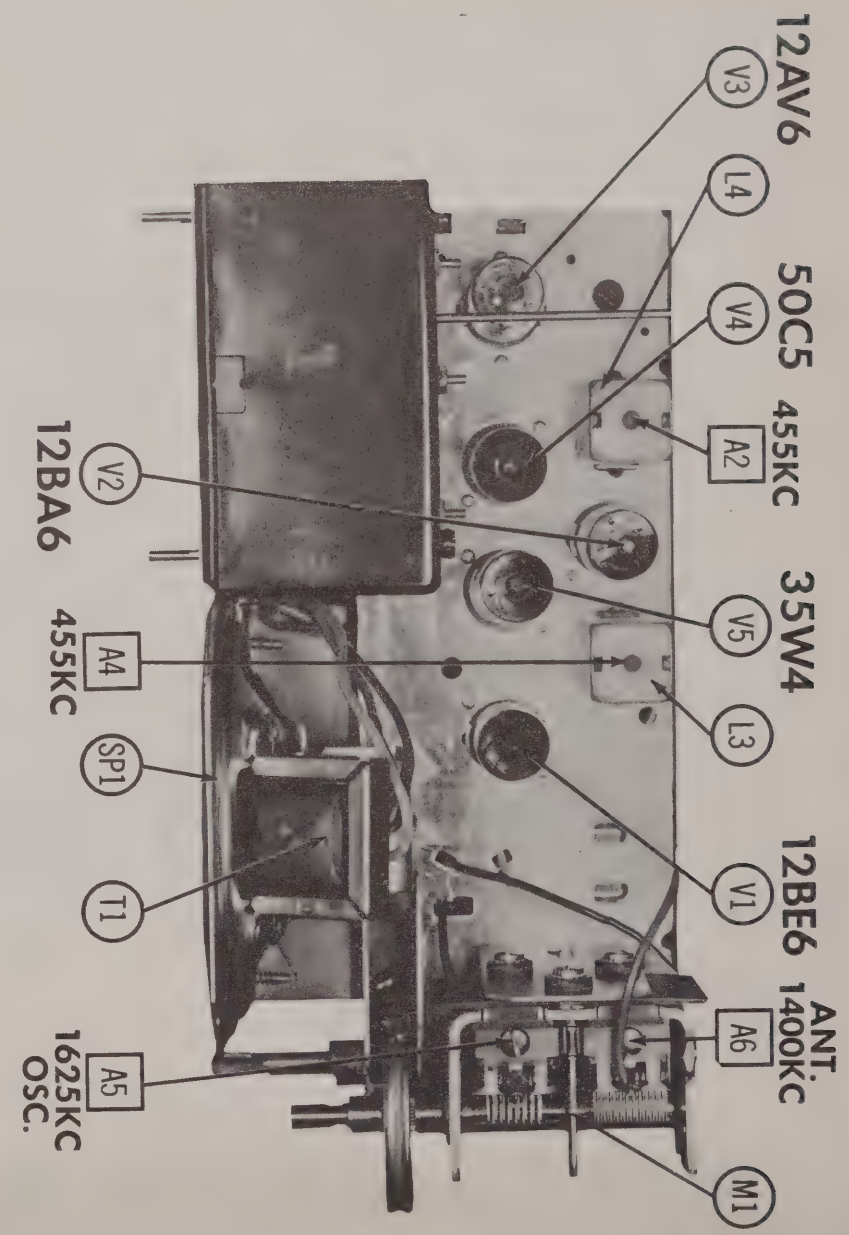
ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Westinghouse PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	V-9993-9	Q13-133	AG-60-Z	BSK-60	U-48	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Westinghouse PART No.	IRC PART No.	
R2	22KΩ	½	RC20AE223M	BTS-22K	
R3	3.3Meg	½	RC20AE335M	BTS-3.3Meg	
R4	68Ω	½	RC20AE680M	BTS-68	
R5A	6.8Meg	½	♦V-10789-1	BTS-6.8Meg	
B	470KΩ	½		BTS-470K	
C	470KΩ	½		BTS-470K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Westinghouse PART No.	IRC PART No.	
R6	150Ω	½	RC20AE151M	BTS-150	
R7	1500Ω	1	RC30AE152M	BTA-1500	
R8	22Ω	1	RC30AE220M		

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		Westinghouse PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2KΩ	3.3Ω	204Ω tap ② 9.8Ω	.85Ω	Part of Spkr.		A-3031 ①	RO-3 ①		① Drill one new mounting hole.

SPEAKER

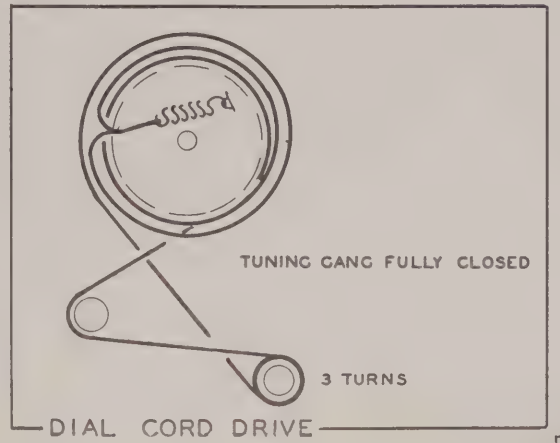
ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	Westinghouse PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.3Ω	V-10079-2	ST-113 Mod. P4-X	4A07	

COILS (RF-IF)

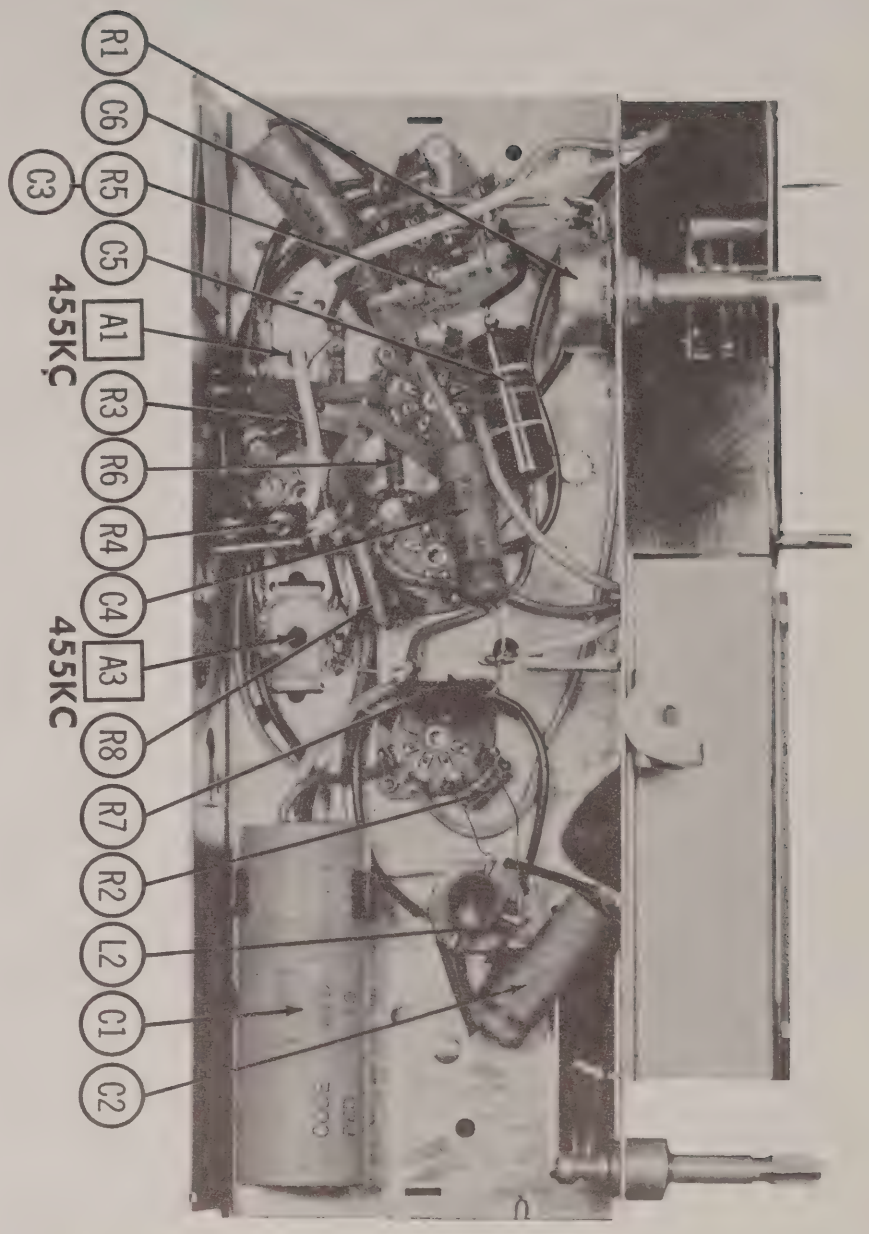
ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	Westinghouse PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	3.2Ω		V-11405-2				Includes cabinet back
L2	Osc. Coil	.9Ω	12Ω	V-9992				
L3	Input IF	17Ω	17Ω	V-10945-1	16-6758	BC-352	12-C1	
L4	Output IF	17Ω	17Ω	V-10945-1	16-6758	BC-353	12-C2	

MISCELLANEOUS

ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M1	Tuning Capacitor	V-11508-1	14-390MMF, 16-110MMF
	Cabinet	V-1290-4	
	Pointer	V-11 574-2	
	Radio Shield	V-11 572-2	Insert
	Clock Shield	V-11 572-3	Insert
	Knob	V-11 573-2	Clock
	Knob	V-10009-18	Volume and tuning
	Dial	V-11 528-1	Radio Background

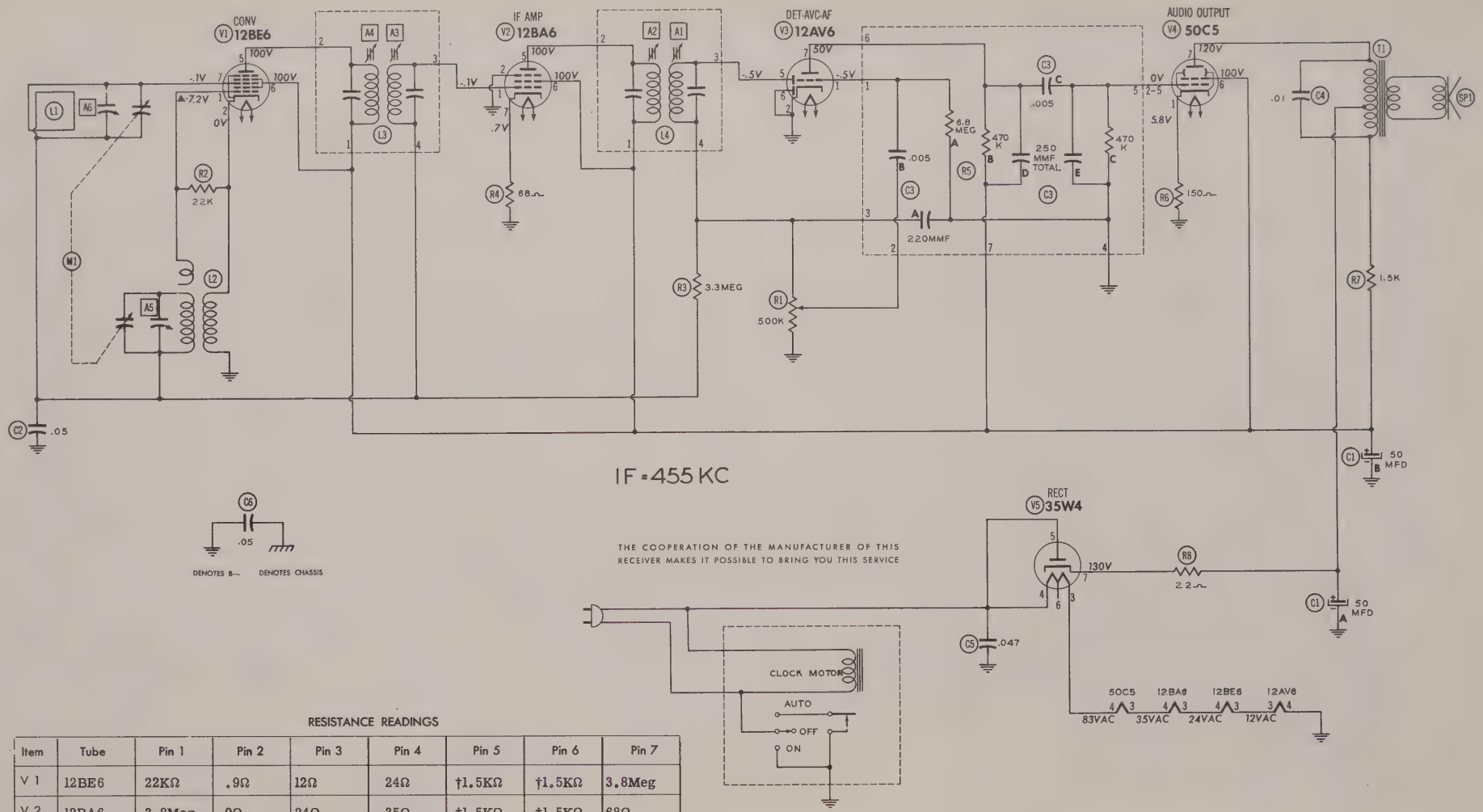


CHASSIS—BOTTOM VIEW



WESTINGHOUSE MODEL H-388T5 (Ch. V-2157-12)

WESTINGHOUSE MODEL H-388T5 (Ch. V-2157-12)



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.9Ω	12Ω	24Ω	†1.5KΩ	†1.5KΩ	3.8Meg
V 2	12BA6	3.8Meg	0Ω	24Ω	35Ω	†1.5KΩ	†1.5KΩ	68Ω
V 3	12AV6	6.8Meg	0Ω	12Ω	0Ω	500KΩ	0Ω	†470KΩ
V 4	50C5	150Ω	470KΩ	35Ω	83Ω	470 KΩ	†1.5KΩ	†226Ω
V 5	35W4	†22Ω	0Ω	83Ω	117Ω	117Ω	†1.5KΩ	1Meg

▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 1 OF V5

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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215-15

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

WESTINGHOUSE MODELS H-746K21, H-746KU21, H-747K21, H-747KU21 (Ch. V-2233-4)

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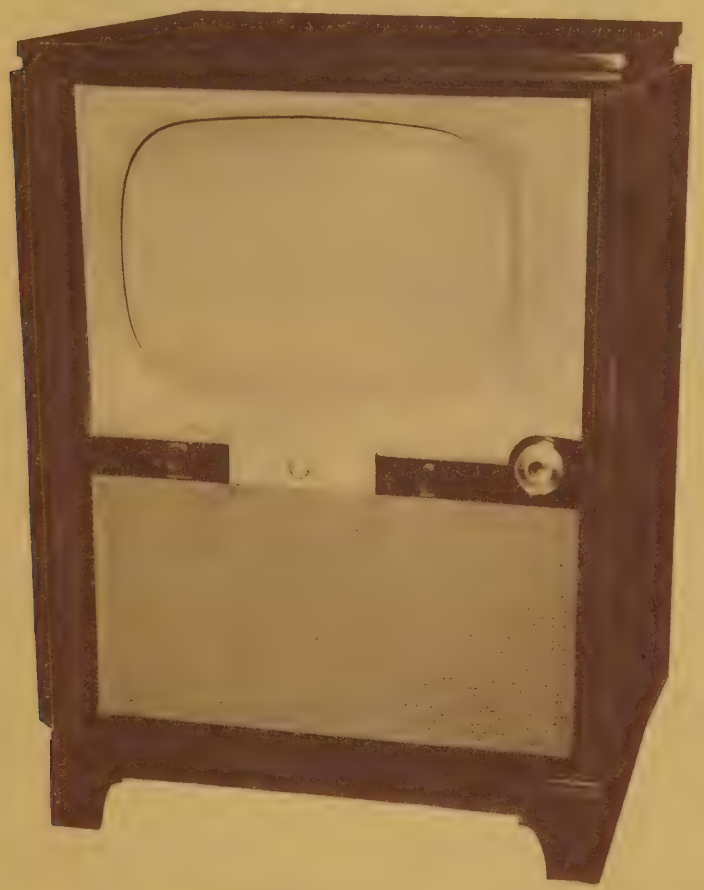

MODEL H-746K21

WESTINGHOUSE MODELS H-746K21, H-746KU21, H-747K21, H-747KU21 (Ch. V-2233-4)

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RTMA MEMBER RADIO-TELEVISION MANUFACTURERS ASSOCIATION

WESTINGHOUSE
MODELS H-746K21, H-746KU21, H-747K21, H-747KU21 (Ch. V-2233-4)

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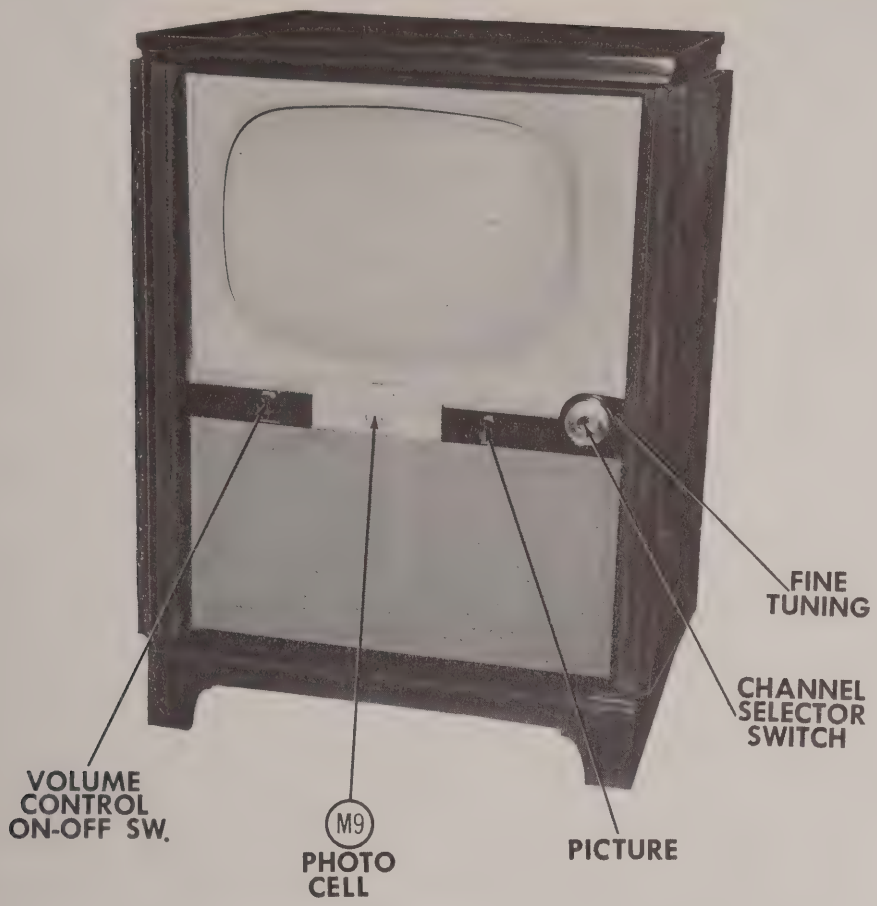

WESTINGHOUSE MODEL H-746K21

TRADE NAME	Westinghouse Models H-746K21, H-746KU21, H-747K21, H-747KU21, (Ch. V-2233-4)
MANUFACTURER	Westinghouse Electric Corp., Television - Radio Div., Sunbury, Pennsylvania
TYPE SET	Television Receiver
TUBES	Twenty-Three

POWER SUPPLY 110-120 Volts AC-60 Cycle RATING 1.92 Amp @ 117 Volts AC
TUNING RANGE- Channels 2 thru 13, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

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WESTINGHOUSE
MODELS H-746K21, H-746KU21, H-747K21, H-747KU21 (Ch. V-2233-4)

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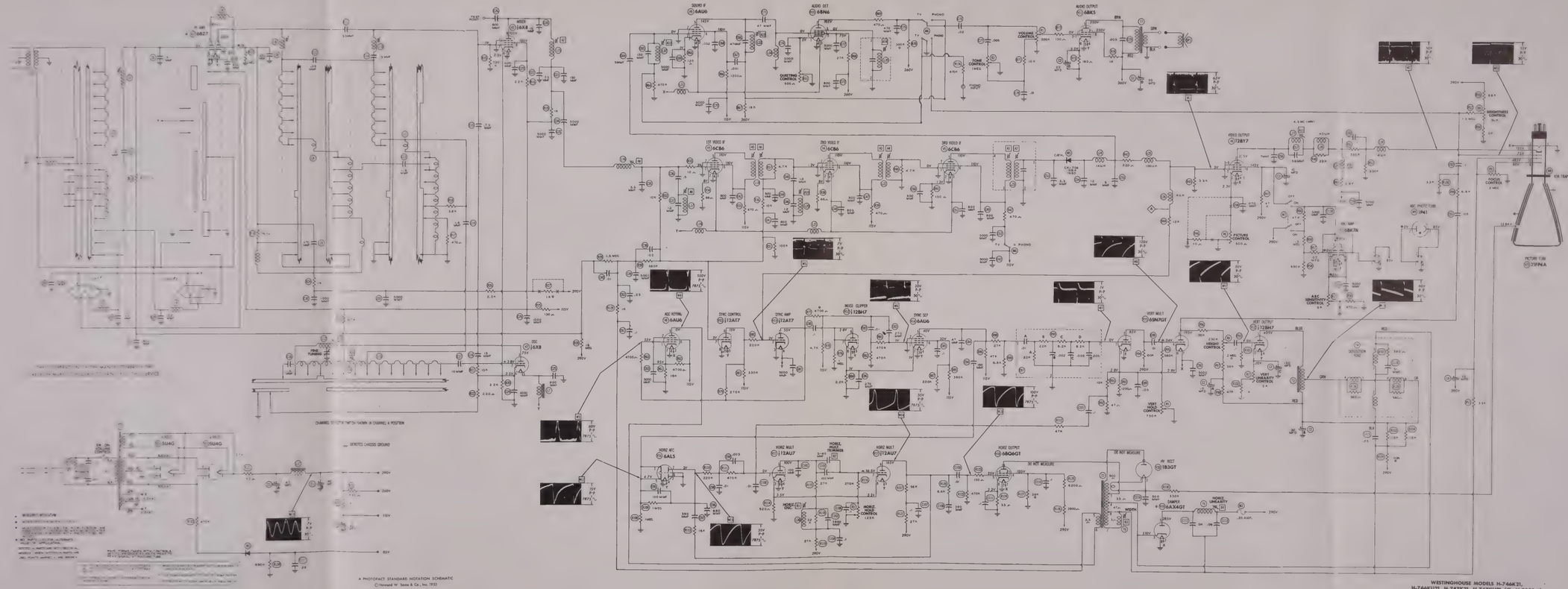

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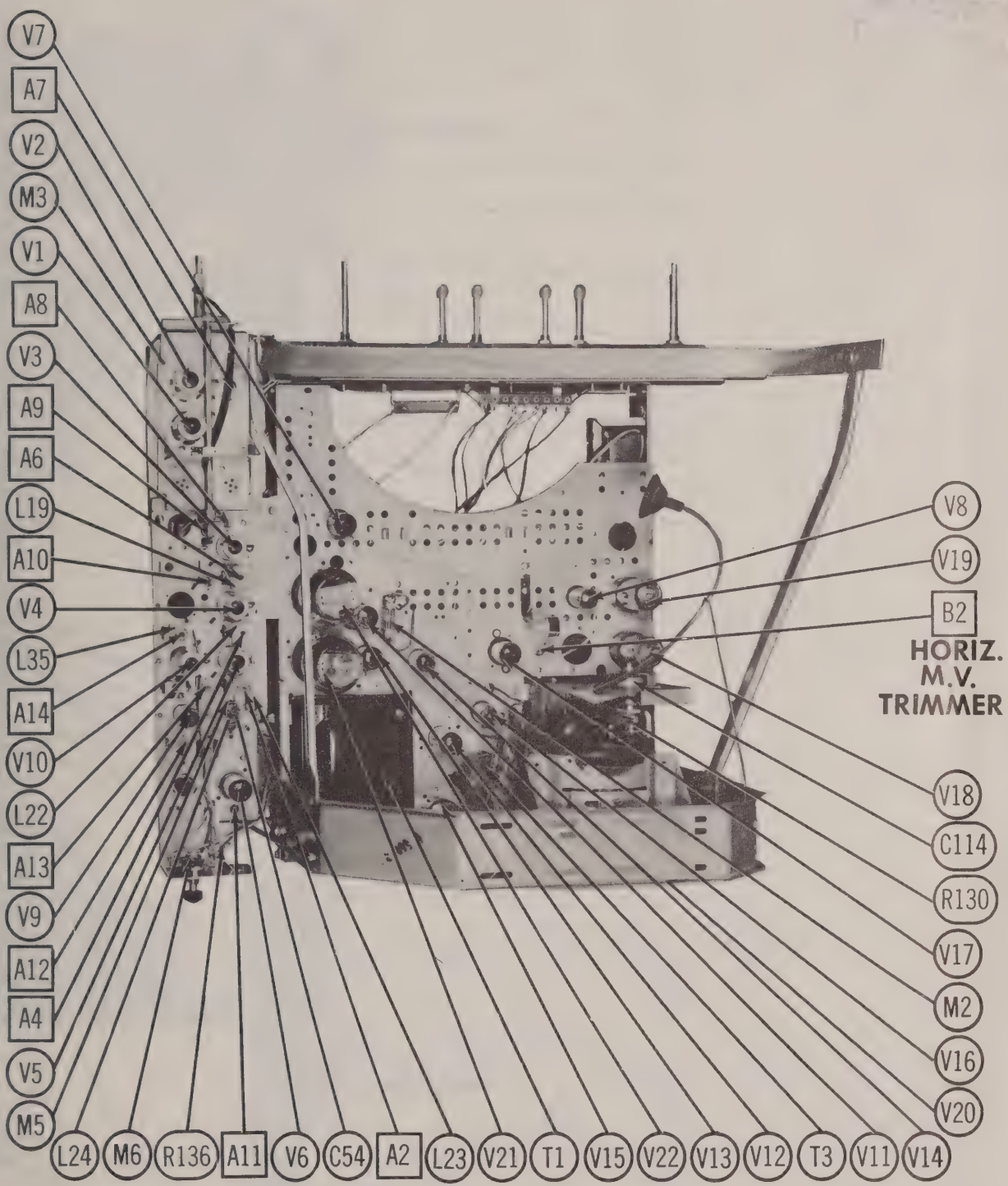
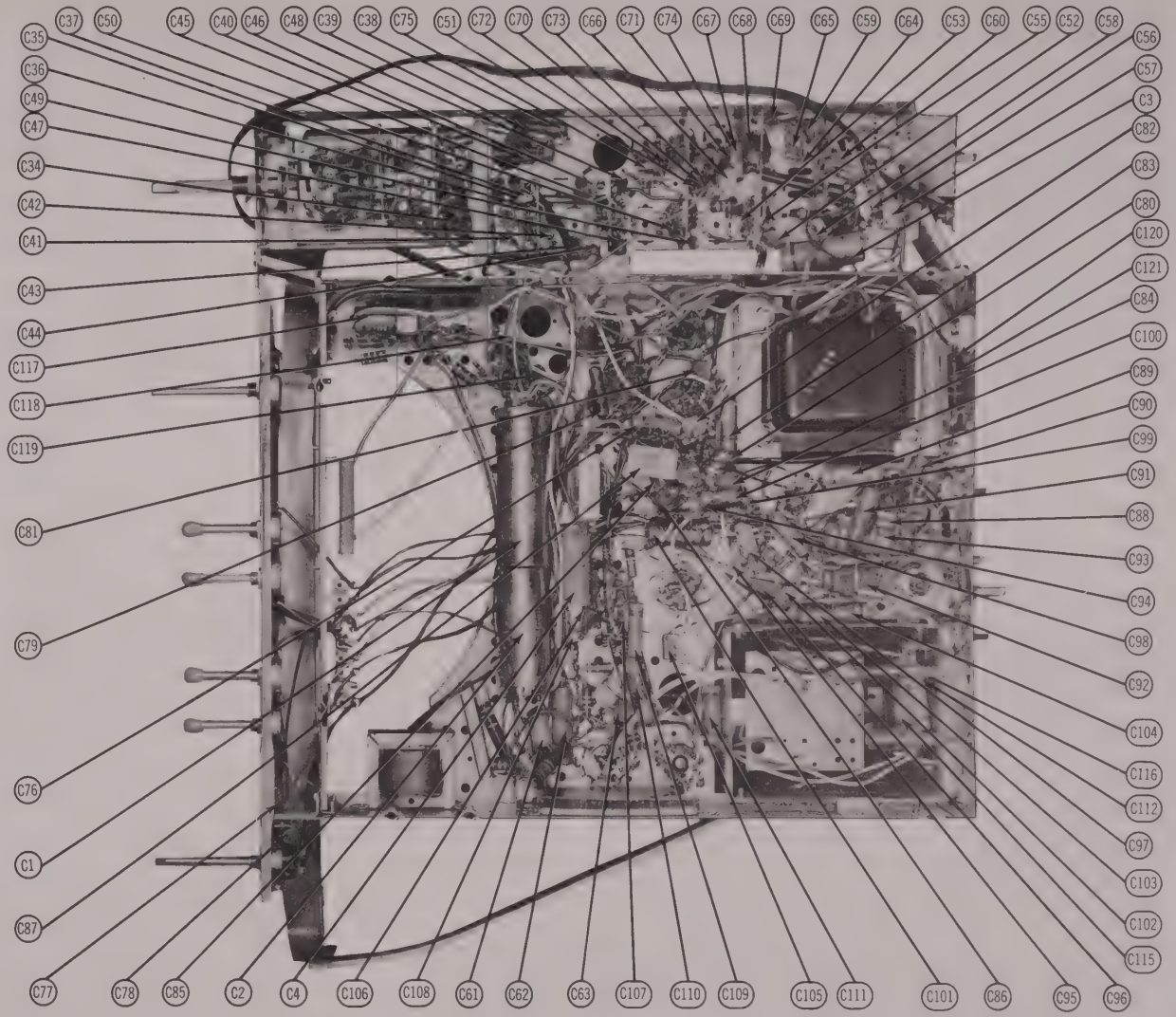
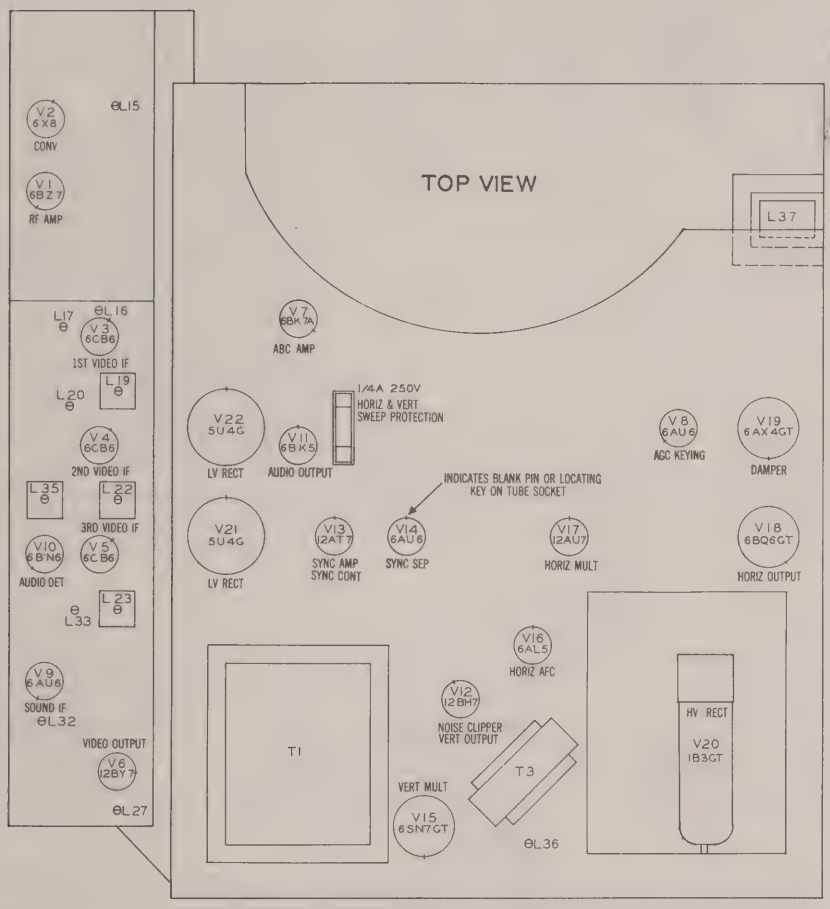


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW–CAPACITOR IDENTIFICATION

TUBE PLACEMENT CHART



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TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V21, V22

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V6, V23
Has pic, no sound - V9, V10, V11
Overloaded picture - V8

SYNC FAILURE
No vert. sync - V14, V15
No horiz. sync - V14, V16, V17
No vert. or horiz. sync - V12, V13, V14

SWEEP FAILURE
No raster, has sound - V17, V18, V19, V20, V23 Fuse (M1)
No vertical deflection - V12, V15
Poor vert. linearity or foldover - V12, V15
Poor horiz. linearity or foldover - V17, V18, V19
Narrow picture - V17, V18, V19, V20, V21, V22
Vert. off freq. - V14, V15
Horiz. off freq. - V14, V16, V17

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal multivibrator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Connect the negative lead of a 9 volt bias source to the ungrounded side of C62. Connect the positive lead to chassis.
Remove the RF amplifier tube, 6BZ7 (or 6BQ7) (V1) from its socket.
The scope should be connected to the proper alignment point through a decoupling network consisting of a 47KΩ resistor in series with the hot lead and a 470MMF capacitor across the vertical input of the scope.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to pin 1 (grid) of 6CB6 (V5). Low side to chassis near V5. Use short leads.	44MC (10Mc Swp)	42.25MC 43.0MC 44.0MC 45.0MC 45.75MC	13	Vert amp to point (A) Low side to chassis.	A1, A2	Attach a detuning clip to pin 5 (plate) of V4. (Caution B+). Adjust A1 for maximum gain at 44MC. Adjust A2 for symmetrical response curve with markers as shown in Fig. 1.
2.	"	High side to pin 1 (grid) of 6CB6 (V4). Low side to chassis near V4.	"	"	"	"	V3, V4	Move detuning clip to pin 5 (plate) of V3. (Caution B+). Adjust A3 for maximum gain at 44MC. Adjust A4 for a symmetrical response curve as in Fig. 2.
3.	"	High side to pin 1 (grid) of 6CB6 (V3). Low side to chassis near V3.	"	"	"	"	A5, A6	Remove detuning clip from V3. Adjust A5 for maximum gain at 44MC. Adjust A6 for a symmetrical response curve as in Fig. 3. If difficulty is experienced in adjusting A5 and A6 as described, preset A10 fully counter clockwise and repeat adjustment of A5 and A6.
4.	"	High side to an ungrounded tube shield floating over converter tube. Low side to chassis.	"	"	"	"	A7, A8	Turn A9 completely clockwise. Adjust A7 for maximum response. Adjust A8 for symmetrical response.
5.	"	"	"	41.25MC	"	"	A9	Adjust for MINIMUM marker response.
6.	"	"	"	42.25MC 43.0MC 44.0MC 45.0MC 45.75MC	"	"	A7, A8	Readjust for response similar to Fig. 4.
7.	"	High side to pin 1 (grid) of 6CB6 (V3). Low side to chassis.	Not used.	47.25MC (400∿Mod)	"	"	A10	Adjust for MINIMUM 400∿ indication on scope. In areas where adjacent channel interference is not a problem A10 can be adjusted to, and left at, full counter-clockwise position.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	.001MFD	High side to point (A). Low side to chassis.	4.5MC (Unmod.)	13	DC probe thru detector (Fig. 5) to pin 11 (cathode) of picture tube. Common to chassis.	A 11	Adjust for MINIMUM deflection.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	.001MFD	High side to point (A). Low side to chassis.	4.5MC (15KC Swp)	4.5MC	13	Vert. Amp. across volume control.	A12, A13	Set generator output to give minimum useful indication on scope. Adjust A12 and A13 for maximum response centered about 4.5MC.
10.	"	"	"	"	"	"	A14	Set generator to give a strong signal and adjust A14 for maximum response at 4.5MC.
11.	"	"	Not used	4.5MC (400∿Mod)	"	"	R11	Starting with a very low signal input, gradually increase the level, at the same time rotating the quieting control, R11, back and forth until the signal level reaches the point where the AM output on scope dips to zero with a rise on each side as R11 is rotated. Set R11 for zero output at this signal level.

SOUND IF ALIGNMENT USING A TV SIGNAL

Replace the RF amplifier tube, V1, in its socket if not previously replaced.
Tune the receiver to a TV station and connect an attenuator between receiver and antenna so that the signal input to receiver can be varied from weak to strong.
Set the quieting control (R11) to the middle of its range.
Adjust A12 and A13 for maximum program sound. If peaks appear at two different slug setting, use the one at farthest counter clockwise position.
Reduce the input signal to lowest usable level and check settings of A12 and A13.
Apply a strong signal and adjust A14 for maximum program sound. If two widely separated peaks appear use the one with A14 furthest counter clockwise.
If two peaks appear within a narrow range of adjustment, the signal strength being applied is too low, or the quieting control is improperly adjusted.
Apply a very weak signal and adjust R11 for minimum noise. Do not leave R11 at maximum counter clockwise position.

ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT

Connect the bias battery as under video IF alignment.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. to point (A). Low side to chassis.	A15	Adjust to place video marker at 50% on high frequency side of IF response curve as in Fig. 6.
13.	"	"	207MC (10MC Swp)	205.25MC 209.75MC	12	"		Check high band channels for correct video marker placement as in Fig. 6. If necessary make slight readjustment of A15 for best compromise on all channels.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
14.	"	"	85MC (10MC Swp)	83.25MC 87.75MC	6	"	A16	Adjust to place video marker at 50% on high frequency side of IF response curve as in Fig. 6.
15.	"	"	79MC (10MC Swp)	77.25MC 81.75MC	5	"		Check low band channels for correct video marker placement as in Fig. 6. If necessary make slight readjustment of A16. for best compromise on all channels.
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10M C Swp)	55.25MC 59.75MC	2			

RF ALIGNMENT

The RF and Mixer portion of this receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

FIG. 1

FIG. 2

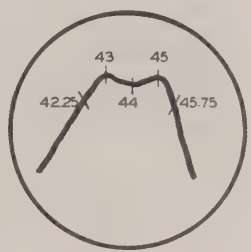


FIG. 3

FIG. 4

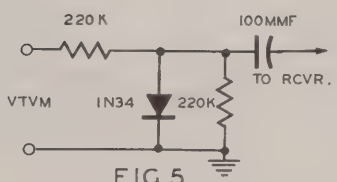


FIG. 5

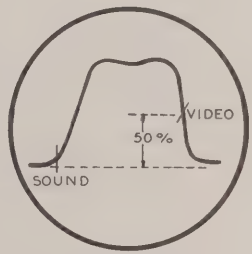
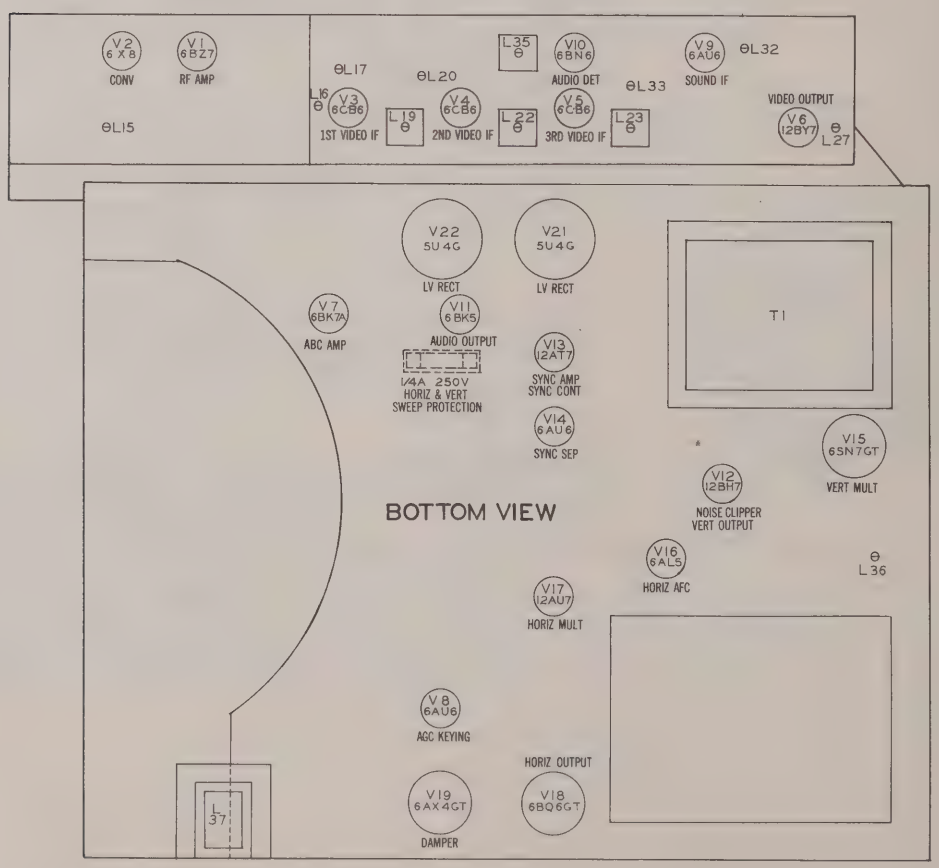


FIG. 6

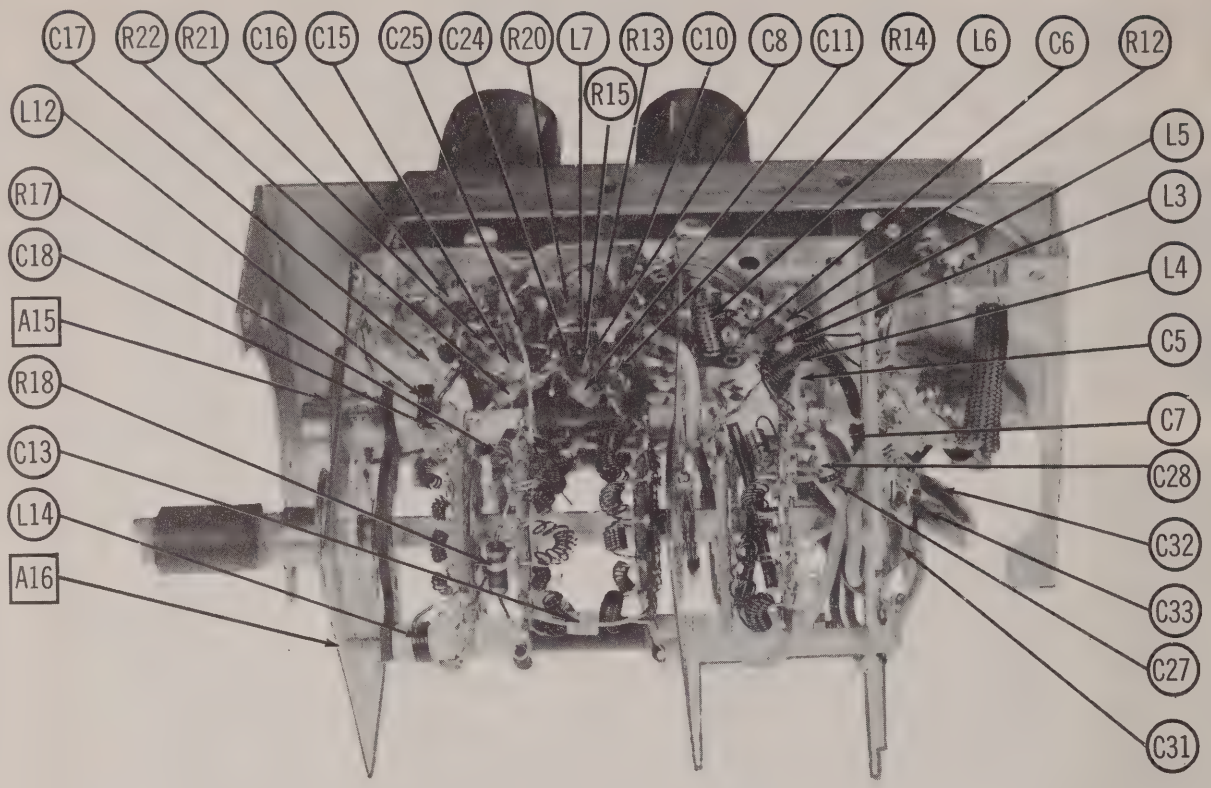
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BZ7	†4.3KΩ	†430KΩ	INF	.1Ω	0Ω	INF	1.9Meg	0Ω	0Ω
V 2	6X8	0Ω	17.2KΩ ▲15.2KΩ	†7.9KΩ	0Ω	.1Ω	2.2KΩ ▲200Ω	220KΩ	†5.4KΩ	†4.3KΩ
V 3	6CB6	110KΩ	68Ω	.1Ω	0Ω	†3.5KΩ	†3.5KΩ	0Ω		
V 4	6CB6	110KΩ	68Ω	.1Ω	0Ω	†3.5KΩ	†3.5KΩ	0Ω		
V 5	6CB6	.4Ω	150Ω	.1Ω	0Ω	†3.5KΩ	†3.5KΩ	0Ω		
V 6	12BY7	140Ω	3.3KΩ	0Ω	.1Ω	.1Ω	0Ω	†4KΩ	†47KΩ	0Ω
V 7	6BK7A	♦†23KΩ	♦100Meg	♦5KΩ	.1Ω	0Ω	♦†23KΩ	♦100Meg	♦5KΩ	0Ω
V 8	6AU6	†17KΩ	†6.3KΩ	.1Ω	0Ω	860KΩ	†2.8KΩ	†6.3KΩ		
V 9	6AU6	470Ω	0Ω	.1Ω	0Ω	†18KΩ	†4.3KΩ	120Ω		
V 10	6BN6	255Ω	15Ω	.1Ω	0Ω	†28KΩ	5.5Ω	†300KΩ		
V 11	6BK5	†1.3KΩ	15Ω	165Ω	.1Ω	0Ω	180Ω	165Ω	†1.8KΩ	
V 12	12BH7	‡9.1KΩ	2 Meg	2.2KΩ	.1Ω	.1Ω	1 Meg	1 Meg	2.2KΩ	0Ω
V 13	12AT7	†13KΩ	15.3KΩ	0Ω	.1Ω	.1Ω	†95KΩ	100KΩ	0Ω	0Ω
V 14	6AU6	940KΩ	0Ω	0Ω	.1Ω	†23KΩ	†150KΩ	2.2KΩ		
V 15	6SN7GT	60KΩ	†100KΩ	1.1KΩ	790KΩ	‡440KΩ	1.1KΩ	.1 Ω	0Ω	
V 16	6AL5	1 Meg	0Ω	0Ω	.1Ω	1 Meg	0Ω	2 Meg		
V 17	12AU7	†54KΩ	2.7Meg	820Ω	.1Ω	.1Ω	†83KΩ	310KΩ	820Ω	0Ω
V 18	6BQ6GT	INF	0Ω	INF	†9.7KΩ	470KΩ	INF	.1Ω	33Ω	Top Cap ‡33Ω
V 19	6AX4GT	INF	INF	100KΩ	INF	†110Ω	INF	.1Ω	0Ω	
V 20	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								Top Cap ‡933Ω
V 21	5U4G	INF	12KΩ	INF	21.5Ω	INF	23.2Ω	INF	12KΩ	
V 22	5U4G	INF	12KΩ	INF	21.5Ω	INF	23.2Ω	INF	12KΩ	
V 23	21FP4A	0Ω	1.5Meg	Pin 6 250KΩ	Pin 10 ‡33KΩ	Pin 11 †170KΩ	Pin 12 .1Ω			

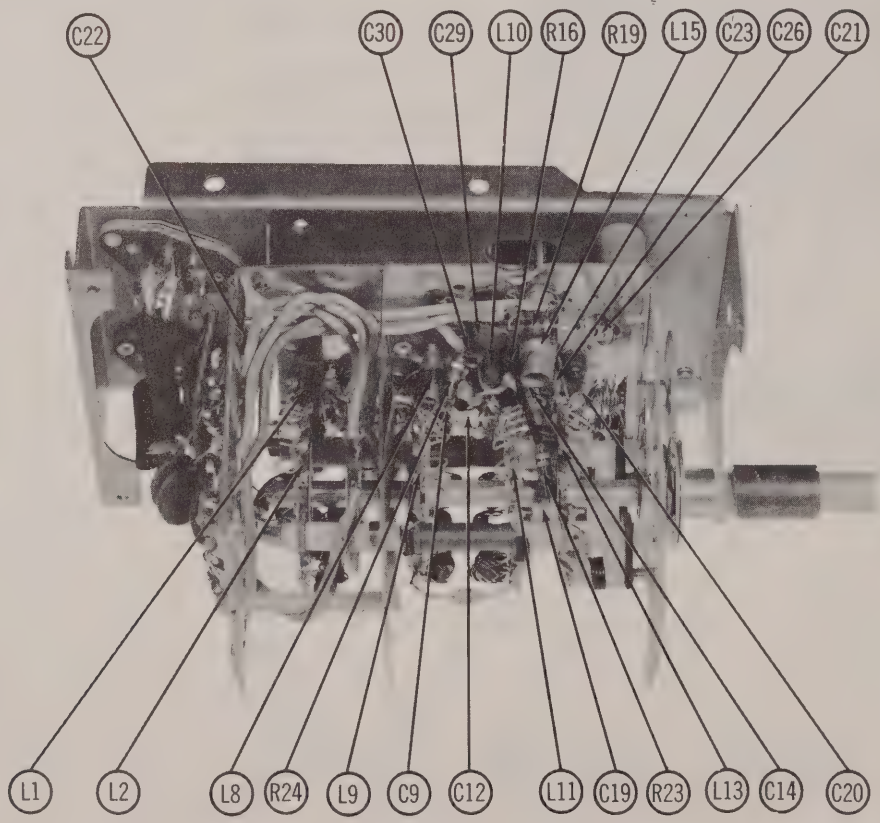
ALL MEASUREMENTS TAKEN WITH "ABC" SWITCH IN"OFF" POSTION UNLESS OTHER SPECIFIED.
♦ MEASURED WITH "ABC" SWITCH IN "ON" POSITION AND "SENSITIVITY" CONTROL IN MAXIMUM COUNTERCLOCKWISE POSITION.
† MEASURED FROM PIN 8 OF V22.
‡ MEASURED FROM PIN 3 OF V19.
▲ MEASURED IN "UHF" POSITION.



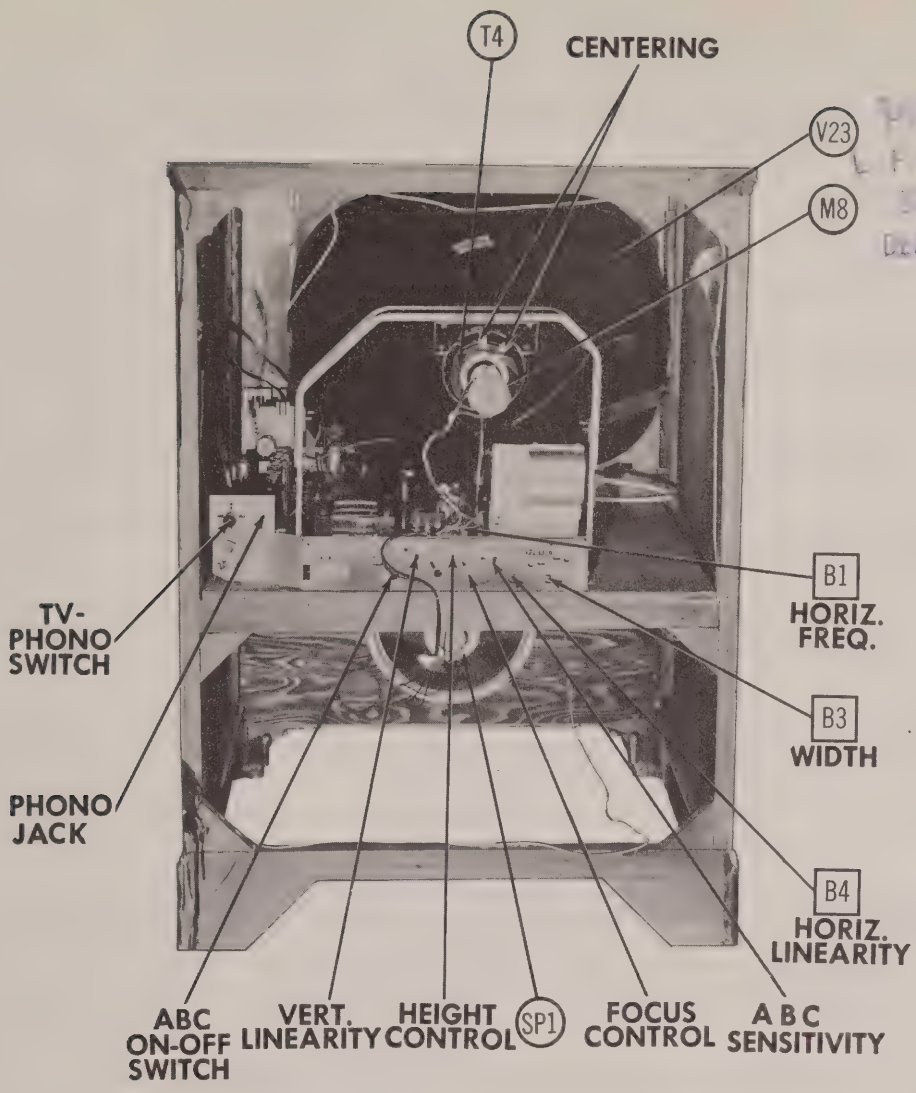
TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

When necessary, the horizontal oscillator coil can be adjusted as follows:

1. Short out the horizontal oscillator coil, L36, with a short jumper wire.
2. Set the horizontal hold control to the center of its mechanical range.
3. Connect the DC probe of a VTVM to the junction of R112 and C101. Connect the common lead to chassis.
4. Adjust the horizontal multivibrator trimmer (B2) for zero reading on VTVM. If zero can be approached but not quite reached it may be necessary to reset the horizontal hold control slightly to one side of mid-range so that zero reading can be obtained on VTVM.
5. Remove the jumper from across the horizontal oscillator coil.
6. Adjust the horizontal oscillator slug (B1) for zero reading on VTVM.

Adjust the width slug (B3) for a picture slightly wider than necessary to fill the picture mask horizontally.

Adjust the horizontal linearity slug (B4) for a picture that is symmetrical from left to right.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

See "Loss of High Voltage".

INSUFFICIENT SWEEP

Check by substitution V17, V18, V19, V21 and V22. Check adjustment of Horizontal Linearity (B4) and Width (B3). Check waveform at W15.

If Satisfactory	If Unsatisfactory
Check C112, C113, V115, C110, T2, yoke and other associated components.	Check C108, C109, horizontal mult. trimmer and other associated components.

DRIVE LINES

Substitute V18 and V19. Check adjustment of horizontal mult. trimmer (B2). Check C108, T2, yoke, C112, C113 and other associated circuit components.

COMPRESSED LEFT SIDE

Check by substitution V17, V18 and V19. Check adjustment of horizontal mult. (B2), horizontal linearity (B4) and width (B3). Check yoke, T2 and other associated circuit components.

FOLDS

Substitute V18 and V19. Check horizontal mult. adjustment (B2). Check C112, C113, C115, T2 , yoke and other associated circuit components.

XMAS TREE EFFECT

Substitute V17. Check C103, C102 and C105. Check L36 for shorted turns.

VERTICAL

LOSS OF SWEEP

Substitute V12 and V15. Check waveform at W9.

If Satisfactory	If Unsatisfactory
Check R103, R104, T3, yoke and other associated components.	Check C88, C93, R97, R98 and other associated circuit components.

INSUFFICIENT SWEEP

Substitute V12 and V15. Check C2A and C2B. Proceed as outlined under "Loss of Sweep".

COMPRESSED AT BOTTOM

Substitute V12 and V15. Check C2A, C2B and C2C. Check T3, yoke and other associated components.

COMPRESSED AT TOP

Substitute V12 and V15. Check C93 for leakage. Check T3, yoke and other associated components.

FOLDS

Substitute V12 and V15. Check C2A, C2B and C2C. Check T3, yoke and other associated circuit components.

SYNC

HORIZONTAL

LOSS OF SYNC

Check by substitution V16 and V17. Check C94, C95, C96, C97 and other associated circuit components.

CRITICAL SYNC

Check by substitution V16 and V17. Check C98, C99, C100, C106 and other components associated with V16 and V17.

ROLLING PICTURE

Check by substitution V16, V17 and V18. Check C99, C100 and other associated components.

VERTICAL

LOSS OF SYNC

Check by substitution V12, V13, V14 and V15. Check vertical integrator network and components associated stages V12, V13, V14 and V15.

CRITICAL SYNC

Check by substitution V15, V14, V13 and V12. Proceed as outlined under "Loss of Sync".

TRIGGERING

Substitute V12, V13, V14 and V15. Check circuit near these stages for filament lead dress.

VIDEO

LOSS OF VIDEO

Substitute V6. Check components that form the coupling network between V6 and picture tube. Check by substitution V8. Check AGC network.

SOUND BARS

Check adjustment of local oscillator. Check 4.5MC Trap adjustment (A11). Check video IF alignment.

POOR RESOLUTION

Check by substitution V1, V2, V3, V4, V5 and V6. Check video IF components especially the bypass capacitors. Check bypass capacitors associated with V6.

POOR CONTRAST

Substitute V6. Check video detector assembly. Check video coupling network between V6 and picture tube. Check picture tube.

SMEAR

Substitute V6. Check video detector assembly. Check L28 and L30 for open. Check R47 and R49 for change of value. Check C60 for change of value. Check picture tube.

ONE WIDE BLACK BAR ACROSS PICTURE

Check tuner, video amplifier and video IF tubes for heater to cathode leakage.

AUDIO

WEAK OR NO SOUND

Check by substitution V9, V10 and V11. Check audio output stage (V11) using audio signal generator.

If Satisfactory	If Unsatisfactory
Check alignment of audio IF stage and adjustment of the gated beam detector. Check associated circuit components.	Check components associated with V11.

BUZZ

Substitute V10. Check adjustment of the quieting control. Check adjustment of the quadrature coil (A14). Check components associated with V10.

DISTORTED

Check by substitution V9, V10 and V11. Check stage of V11 using audio signal generator.

If Distorted	If Undistorted
Check components associated with V11.	Check the gated beam detector circuit and adjustments. Check audio IF stage.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		Westinghouse PART No.	STANDARD REPLACEMENT		
V1A	RF Amplifier	6BZ7	6BZ7	9AJ	
B	RF Amplifier	6BQ7	6BQ7	9AJ	
V2	Converter	6X8	6X8	9AK	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Output	12BY7	12BY7	9BF	
V7	ABC Amplifier	6BK7A	6BK7A	9AJ	
V8	AGC Keying	6AU6	6AU6	7BK	
V9	Sound IF Amp.	6AU6	6AU6	7BK	
V10	Audio Detector	6BN6	6BN6	7DF	
V11	Audio Output	6BK5	6BK5	9BQ	
V12	Noise Clipper-Vert. Output	12BH7	12BH7	9A	
V13	Sync Amplifier-Sync Control	12AT7	12AT7	9A	
V14	Sync Separator	6AU6	6AU6	7BK	
V15	Vert. Mult.	6SN7GT	6SN7GT	8BD	
V16	Horiz. AFC	6AL5	6AL5	6BT	
V17	Horiz. Mult.	12AU7	12AU7	9A	
V18	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V19A	Damper	6AX4GT	6AX4GT	4CG	
B	Damper	6AS4GT	6AS4GT	4CG	
V20	HV Rectifier	1B3GT	1B3GT	3C	
V21	LV Rectifier	5U4G	5U4G	5T	
V22	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA			RTMA BASE TYPE	NOTES
	Westinghouse PART No.	SYLVANIA PART No.			
V23	21FP4A	21FP4A 21FP4 ①		12C	① Circuit changes necessary.

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Westinghouse PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▰40	450	V-9891	AFH4-93		DO92		FP428.4	TVL-4720	
B	■40	450								
C	▲30	350								
D	30	350								
C2A	■10	450	V-11535-1	AFH3-158		C117			R1373	
B	▰30	500		PRS150/150		BRH5015				
C	▲150	50								
D	20	50								
C3	10	450	V-10293-1	PRS500/10		BR1045A		TC72	TVA-1705	
C4	10	450	V-10293-1	PRS500/10		BR1045A		TC72	TVA-1705	
C5	15						N330K-150			
C6	3			SI3NP0			NP0K-030	ZT-553		
C7	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C8	470			CN-1-0005	MFT-500				503C-T47	
C9	470			SI470	D6-471	TM5T5	GP2K-471	UC-5347	5GA-T47	
C10	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C11	.33						NP0K-R33			
C12	.36						NP0K-R36			
C13	1.6						NP0K-1R6			
C14	15						N330K-150			
C15	.75						NP0K-R75	ZT-5675		
C16	15						N330K-150			
C17	10						N470K-100			
C18	1.5			SI1.5NP0	TCZ-1.5		NP0K-1R5	ZT-5515	5TCCB-V15	
C19	1.6						NP0K-1R6			
C20	10			SI10NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C21	150									
C22	7.5						NP0K-7R5			
C23	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C24	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C25	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C26	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C27	22			SI22NP0	TCZ-22		NP0K-220		5TCC-Q22	
C28	22			SI22NP0	TCZ-22		NP0K-220		5TCC-Q22	
C29	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C30	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C31	5000		V-5596	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C32	5000		V-5596	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C33	5000		V-5596	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C34	5000		V-5596	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C35	3.3		V-9926-2	SI3.3NP0	TCZ-3.3		NP0K-3R3	ZT-5533	5TCCB-V33	
C36	.5		V-5658-11							
C37	12		R3CC20SL120K							
C38	.02	400	RCP10M6203M	P488-02	DF-203	PTE4S2		PT412	4TM-S2	
C39	5000		V-5596	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C40	.01	400	RCP10M6103M	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C41	800		V-9863-1	BPD-0008	DD-801	TM5D1	801-001	DC-521	5HK-D1	
C42	800		V-9863-1	BPD-0008	DD-801	TM5D1	801-001	DC-521	5HK-D1	
C43	5000		V-5596	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C44	800		V-9863-1	BPD-0008	DD-801	TM5D1	801-001	DC-521	5HK-D1	
C45	1.0		V-5658-1	SI1NP0	TCZ-1		NP0K-010		5TCCB-V1	
C46	12		R3CC20SL120K							
C47	800		V-9863-1	BPD-0008	DD-801	TM5D1	801-001	DC-521	5HK-D1	
C48	800		V-9863-1	BPD-0008	DD-801	TM5D1	801-001	DC-521	5HK-D1	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	Westinghouse PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C49	800		V-9863-1	BPD-0008	DD-801	TM5D1	801-001	DC-521	5HK-D1	
C50	800		V-9863-1	BPD-0008	DD-801	TM5D1	801-001	DC-521	5HK-D1	
C51	800		V-9863-1	BPD-0008	DD-801	TM5D1	801-001	DC-521	5HK-D1	
C52	5000		V-5596	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C53	3.3		V-9926-2	SI3.3NP0	TCZ-3.3		NP0K-3R3	ZT-5533	5TCCB-V33	
C54	12		R3CC2G5L120K							
C55	5		V-9926-3	SI5NP0	TCZ-4.7		NP0K-060	ZT-555	5TCCB-V47	
C56	7		V-5658-12							
C57	56	500	RCM20D560K							
C58	470	500	RCM30B471K	1469-0005		5R5T5		MCB345	MB- 35	
C59	5000		V-5596	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C60	.1	400	RCP10M6104M	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C61	.1	400	RCP10W6104M	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C62	.25	400	RCP10W4254M	P488-25		PTE4P25		PT4025	4TM-P25	
C63	5000		V-5596	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C64	5		V-9926-3	SI5NP0	TCZ-4.7		NP0K-050	ZT-555	5TCCB-V47	
C65	150	500	RCM20B151K	1469-00015		5R5T15		MCB236	MB-315	
C66	47	500	RCM20B470K	1468-00005	D6-470	5W5Q5	GP1K-470	MC225	1FM-45	
C67	.001	400	RCP10M6102M	P688-002	D6-102	PTE5D1	GP2L-102	PT521	6TM-D1	
C68	.002	400	RCP10W6202M	P688-002	D6-202	PTE6D2	GP2-333-202	PT522	6TM-D2	
C69	5000		V-5596	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C70	5000		V-5596	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C71	47	500	RCM20B470K	1468-00005	D6-470	5W5Q5	GP1K-470	MC225	1FM-45	
C72	5000		V-5596	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C73	5000		V-9863	BPD-0008	DD-801	TM5D1	801-001	DC-521	5HK-D1	
C74	5000		V-5596	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C75	470	500	RCM20B471K	1468-00005	D6-471	5W5T5	GP2K-471	MC345	1FM-35	
C76	.02	400	RCP10M6203M	P488-02	DF-203	PTE4P2		PT402	4TM-P2	
C77	.005	400	RCP10M6502M	P688-005	D6-502	PTE6D5	GP2-333-502	PT525	6TM-D5	
C78	.01	400	RCP10M6103M	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C79	.005	400	RCP10M6502M	P688-005	D6-502	PTE6D5	GP2-333-502	PT525	6TM-D5	
C80	.1	400	RCP10W4104M	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C81	5000		V-5596	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C82	270	500	RCM20B271K							
C83	.01	400	RCP10M6103M	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C84	47	500	RCM20B470K	1468-00005	D6-470	5W5Q5	GP1K-470	MC225	1FM-45	
C85	.1	400	RCP10W4104M	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C86	270	500	RCM20B271K							
C87A	.01			P688-01		PTE6S1	GP2-333-103	PT611	6TM-S1	
B	.002		4V-11192-1	P688-002	⊕PC-101	PTE6D2	GP2-333-202	PT622	6TM-D2	
C	.005			P688-005		PTE6D5	GP2-333-502	PT625	6TM-D5	
D	.005			P688-005		PTE6D5	GP2-333-502	PT625	6TM-D5	
C88	.01	400	RCP10M6103M	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C89	.05	400	RCP10W4503M	P486-05	DF-503	PTE4S5		PT405	4TM-S5	
C90	5000		V-5596	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C91	.05	400	RCP10W4503K	P486-05	DF-503	PTE4S5		PT415	4TM-S5	
C92	.1	400	RCP10W4104M	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C93	.1	600	RCP10M6104M	P488-1	DF-104	PTE6P1		PT601	6TM-P1	
C94	150	500	RCM20B151K	1469-00015		5R5T15		MCB236	MB-315	
C95	100	500	RCM20B101K	1468-00001		5R5T1		MCB235	MB-311	
C96	680	500	RCM20B681K	1469-0007		5R5T7			MB-37	
C97	390	500	RCM20B391K	1469-0004		5R5T4		MCB343	MB-34	
C98	.01	400	RCP10M6103M	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C99	.005	400	RCP10M6502M	P688-005	D6-502	PTE4S5	GP2-333-502	PT525	6TM-D5	
C100	.01	400	RCP10M6103M	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C101	.1	400	RCP10W4104M	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C102	100	500	RCM20B101K	1469-0001		5R5T1		MCB235	MB-31	
C103	3900	500	RCM30C392K	1464-004		DR5D4		MCB463	MB-34	
C104	.1	400	RCP10W4104M	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C105	100	500	RCM20B101K	1469-0001		5R5T1		MCB235	MB-31	
C106	.1	400	RCP10W4104M	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C107	.1	400	RCP10W4104M	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C108	390	500	RCM20B391K	1469-0004		5R5T4		MCB343	MB-34	
C109	.01	600	RCP10M6103M	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C110	.1	600	RCP10M6104M	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C111	.1	400	RCP10W4104M	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C112	.04	400	RCP10M4403M	P488-04		PTE4S4		PT404	4TM-S4	
C113	.06	400	RCP10M6603M	P488-06		PTE4S6		PT406	4TM-S6	
C114	500	20000	V-9901-3	HV30C	TV3-502	MMC-C30T5	413-501	HV20035A	20DK-T5	
C115	.25	400	RCP10M4254M	P488-25		PTE4P25		PT4025	4TM-P25	
C116			V-9782-10510J							Note 1
C117	.25	400	RCP10W4254M	P488-25		PTE4P25		PT4025	4TM-P25	
C118	5000		V-5596-1	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C119	5000		V-5596-1	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C120	.01	600	V-5040-15	689ZX-01		PJ681		PT611	6TM-S1	
C121	.01	600	V-5040-15	689ZX-01		PJ681		PT611	6TM-S1	

Note 1. Models using yoke part #V-11571-2 use 43MMF in this application (part #V-9782-10430J).
* Items C87A, C87B, C87C, C87D, R90A, R90B, R90C, R90D are combined in one unit.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	Westinghouse PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	V-11540-1	Q18-133X	AT-88	BT-66-B	UT-429	Volume Tap④ 50KΩ
B	Shaft		Not Req.	Not Req.	PS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SW-A	Not Req.	US-26	Attach to R1A
R2A	1 Meg	½	V-11536-1	Q13-137	AA-69-Z	AB-70	U-53	Tone
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R2A
R3A	125KΩ	½	V-11538-1	Q11- 238	AG-52-B	AB-60	U-415	Horiz. Hold
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R3A
R4A	50KΩ	½	V-11536-1	Q11-123	AG-44-B	AB-31	U-35	Brightness
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R4A
R5A	750KΩ	½	V-11539-1	Q11-139	AG-61-B	AB-69	U-54	Vert. Hold
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R5A
R6A	1500Ω	½	V-11537A-1	Q17-109	AG-31-B	B-6	U-8	Picture - Note 1
B	Shaft		Not Req.	Not Req.	PS-3	Not Req.	Not Req.	Attach to R6A
R7A	5000Ω	½	V-8463	Q11-14	AG-19-S	AB-10	SU-14	Vert. Linearity
B	Shaft		Not Req.	Not Req.	FK8-1/4	AK-1	Not Req.	Attach to R7A
R8A	250KΩ	½	V-9863-4	Q11-130	AG-55-S	AB-50	SU-48	Height
B	Shaft		Not Req.	Not Req.	FK8-1/4	AK-1	Not Req.	Attach to R8A
R9A	2 Meg	½	V-9894S-2	Q11-139	AG-63-S	AB-75	SU-56	Focus
B	Shaft		Not Req.	Not Req.	KS8-3	AK-1	Not Req.	Attach to R9A
R10A	5000Ω	½	V-8463	Q11-14	AG-19-S	AB-10	SU-14	ABC Sensitivity-Note 2
B	Shaft		Not Req.	Not Req.	FK8 -1/4	AK-1	Not Req.	Attach to R10A
R11	5000	1						Quieting-Wire Wound

Note 1. Some models may use alternate control (Part No. V-11537-1.
Note 2. Some models may use alternate control (Part No. V-9916-J).

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	Westinghouse PART No.	IRC PART No.	NOTES
R12	4700Ω	½		BTS-4700	
R13	1 Meg	½			
R14	750KΩ-5%	½			
R15	220KΩ	½		BTS-220K	
R16	2200Ω	½		BTS-2200	
R17	470Ω	½		BTS-470	
R18	3900Ω	½		BTS-3900	
R19	1000Ω	½		BTS-1000	
R20	2200Ω	½		BTS-2200	
R21	15KΩ	½			
R22	220Ω	½		BTS-220	
R23	4700Ω	½		BTS-4700	
R24	1000Ω	½		BTS-1000	
R25	150Ω	½	RC20AE151K	BTS-150	
R26	2300Ω	2	RC40AE222K	BTB-2200	
R27	1000Ω	1	R=20AE102K	BTA-1000	Note 1
R28	18Meg-5%	½	RC20AE186J	BTB-1.8Meg-5%	
R29	1.5Meg- 5%	½	RC20AE155J	BTB-1.5Meg- 5%	
R30	560KΩ-5%	½	RC20AE564J	BTB-560K-5%	
R31	100KΩ-5%	½	RC20AE104J	BTB-100K-5%	
R32	10KΩ	½	V-9927-10	BTS-10K	
R33	10Ω	½	RC20AE100K		
R34	68Ω	½	RC20AE680K	BTS-68	
R35	470Ω	½	RC20AE471M	BTS-470	
R36	10KΩ	½	RC20AE5103M	BTS-10K	
R37	4700Ω-5%	½	V-9927-2	BTS-4700-5%	
R38	68Ω	½	RC20AE680K	BTS-68	
R39	470Ω	½	RC20AE471M	BTS-470	
R40	4700Ω-5%	½	V-9927-2	BTS-4700-5%	
R41	150Ω	½	RC20AE151K	BTS-150	
R42	470Ω	½	RC20AE471M	BTS-470	
R43	220Ω	½	RC20AE221K		
R44	12KΩ	½	RC20AE123K	BTS-12K	
R45	3300Ω	½	RC20AE332K	BTS-3300	
R46	10Ω	½	RC20AE100K	BTS-10	
R47	47KΩ	½	RC40AE473K	BTB-47K	
R48	22KΩ	½	RC20AE223K	BTS-22K	
R49	3900Ω	½	V-5924-3		
R50	330KΩ	½	RC20AE334K	BTS 330K	
R51	330KΩ	½	RC20AE334K	BTS-330K	
R52	1.5Meg	½	RC20AE155K	BTS-1.5Meg	
R53	33KΩ	½	RC20AE333K	BTS-33K	
R54	10KΩ	½	RC20AE103K	BTS-10K	
R55	68KΩ	1	RC30AE683K	BTA-68K	
R56	470Ω	2	RC40AE471K	BTB-470	Note 1
R57	100Meg	½	RC20AE107M		
R58	330KΩ	½	RC20AE334K	BTS-330K	
R59	1.5Meg	½	RC20AE155K	BTS-1.5Meg	
R60	47KΩ	2	RC40AE473K	BTB-47K	
R61	18KΩ	2	RC40AE183K	BTB-18K	
R62	4700Ω	2	RC30AE472K	BTA-4700	
R63	4700Ω	½	RC20AE472K	BTS-4700	
R64	4700Ω	½	RC20AE474K	BTS-470K	
R65	130Ω	2	RC20AE131K	BTB-130	
R66	1200Ω	½	RC20AE122K	BTS-1200	
R67	18KΩ	2	RC40AE183K	BTB-18K	
R68	27KΩ	2	RC40AE273K	BTB-27K	
R69	470Ω	½	RC20AE471M	BTS-470	
R70	300KΩ-5%	½	RC20AE304J	BTS-300K-5%	Note 2
R71	10KΩ	½	RC20AE1034M	BTS-10K	
R72	150Ω	½	RC20AE151K		
R73	180Ω	½	RC20AE181K	BTS-180	
R74	1000Ω	½	RC20AE102K	BTS-1000	
R75	680Ω	2	RC40AE681K	BTB-680	

ITEM No.	RATING OHMS	RATING WATT	Westinghouse PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.	NOTES
R76	1 Meg	½	RC20AE105K		BTS-1 Meg				
R77	4700Ω	½	RC20AE472K		BTS-4700				Note 3
R78	470ΩΩ	½	RC20AE743K		BTS-4700				
R79	270KΩ	½	RC30AE274K		BTS-270K				
R80	220KΩ	½	RC20AE224K		BTS-220K				
R81	330KΩ	½	RC20AE334K		BTS-330K				
R82	470KΩ	½	RC20AE474K		BTS-470K				
R83	470KΩ	½	RC20AE474K		BTS-470K				
R84	2200Ω	½	RC20AE222K		BTS-2200				
R85	390KΩ	½	RC20AE394K		BTS-390K				
R86	47KΩ	½	RC20AE473K		BTS-47K				
R87	220KΩ	½	RC20AE224K		BTS-220K				
R88	27KΩ	½	RC20AE273K		BTS-27K				
R89	6800Ω	½	RC20AE682K		BTS-6800				
R90A	22KΩ				BTS-22K				
B	22KΩ			⊕V-11193-1	BTS-22K				
C	8200Ω				BTS-8200				
D	8200Ω				BTS-8200				
R91	10KΩ	½	RC20AE103K		BTS-10K				
R92	47Ω		RC20AE470K		BTS-47				
R93	120Ω	½	RC20AE122K		BTS-1200				
R94	100KΩ	½	RC30AE104K		BTA-100K				
R95	560KΩ	½	RC20AE564K		BTS-560K				
R96	100KΩ	½	RC20AE104K		BTS-100K				
R97	39KΩ	½	RC20AE393K		BTS-39K				
R98	47KΩ	½	RC20AE473K		BTS-47K				
R99	6800Ω	½	RC20AE682K		BTS-6800				
R100	3300Ω	½	RC20AE332K		BTS-3300				
R101	2 Meg	½	RC20AE205K						Note 4
R102	1000Ω	½	RC20AE102K		BTS-1000				
R103	15KΩ	2	RC40AE 153K		BTB-15K				
R104	15KΩ	2	RC40AE153K		BTS-15K				
R105	560Ω	½	RC20AE561K		BTS-560				
R106	560Ω	½	RC20AE561K		BTS-560				
R107	390Ω	½	RC20AE391K		BTS-390				
R108	1 Meg	½	RC20AE105K		BTS-1 Meg				
R109	1 Meg	½	RC20AE105K		BTS-1 Meg				
R110	220KΩ	½	RC20AE225K		BTS-220K				
R111	470KΩ	½	RC20AE474K		BTS-470K				
R112	47KΩ	½	RC20AE473K		BTS-47K				
R113	18KΩ	½	RC20AE183K		BTS-18K				
R114	820Ω	½	RC20AE821K		BTS-820				
R115	27KΩ	½	RC20AE273K		BTS-27K				
R116	270KΩ-5%	½	RC20AE274J		BTS-270K-5%				
R117	56KΩ	½	RC20AE563K		BTS-56K				
R118	22KΩ	½	RC20AE223K		BTS-22K				
R119	27KΩ	½	RC20AE273K		BTS-27K				
R120	680Ω	½	RC20AE682K		BTS-6800				
R121	47KΩ	½	RC20AE473K		BTS-47K				
R122	470KΩ	½	RC20AE474K		BTS-470K				
R123	150Ω	½	RC20AE151M						
R124	3.3Ω	5	V-11328-9		1 3/4A-8000				
R125	8200Ω	5	V-11328-9		1 3/4A-8000				
R126	3900Ω	2	RC40AE392K		BTB-3900				
R127	33KΩ	2	RC40AE333K		BTB-33K				Note 5
R128	1000Ω	½	RC20AE102K		BTS-1000				
R129	100KΩ	1	RC30AE104K		BTA-100K				Note 6
R130	330KΩ	1	V-9927-7						
R131	50Ω	10	V-11328-8						
R132	3000Ω	20	V-9375-4		2D-3000				
R133	470KΩ	½	RC20AE474K		BTS-470K				
R134	680KΩ	½	RC20AE684K		BTS-680K				
R135	220KΩ	½	RC30AE224M		BTA-220K				
R136	470KΩ	½	RC20AE474K		BTS-470K				

Note 1. Not used in all models.
Note 2. Some models may use a 220KΩ resistor in this application.
Note 3. Some models may use a 2200Ω resistor in this application.
Note 4. Some models may use a 2.2Meg resistor in this application.
Note 5. Some models may use a 68KΩ resistor in this application.
Note 6. Some models may use a 39KΩ resistor in this application.
* Items R90A, R90B, R90C, R90D, C87A, C87B, C87C, C87D are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	Westinghouse PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.
T1	117VAC	595VCT	5VAC	12.5VCT	V-11544-1		P-3066①②			
		@ 1.92A	.240ADC	@ 6A						

① Parallel the two 5V windings and use as Sec. 2.
② Use low taps on high voltage secondary tape other leads.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	Westinghouse PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.	NOTES
T2	983Ω	3.5Ω	V-11548-2		HVO-9①②		D-19③④		Horiz. Output Trans.
	tap@3Ω	SEC. 2							
	500, 83Ω	0Ω							
T3	1800Ω		V-10909-1	A-8141	A-3039	T3O-12	A-104X		Vert. Output Trans.
	tap @ 7Ω								
T4A	26Ω		V-11576-1 ⑤ ⑫	DY-11A①		TY-7 ⑥	Y-19 ⑦		Horiz. Deflection Coils
B	45Ω								Vert. Deflection Coils
T5	21Ω		V-11545-1	WC-5 ⑤	MWC-1⑤⑥	TWL-1	WC-12 ⑩		Horiz. Linearity Coil

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	Westinghouse PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.	NOTES
T6	5Ω		V-11546-3		MWC-8	TL-3 ⑪	WC-12 ⑩		Width Coil

① Use with width coil MWC-1.
② Connect hot side of yoke and damper cathode to terminal #7, yoke return to terminal #3.
Use secondary of MWC-1 for keyer and AFC (raster and no picture, reverse secondary).
③ Use with width coil WC-11.
④ Jumper terminals 7 and 8. Connect damper cathode and hot side of yoke to terminal 7 or 8, yoke return to terminal #3. Connect WC-11 secondary to keyer and AFC (raster and no picture reverse secondary).
⑤ Assy. contains yoke V-11571-1.
⑥ Use original horiz deflection net if necessary.
⑦ Use original deflection coil network.
⑧ Do not use secondary.
⑨ Enlarge mounting hole.
⑩ Connect to coded blue and red terminals.
⑪ Do not use tap.
⑫ Includes centering device.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE	RATING DC RES. SEC.	RATING DC RES. PRI.	Westinghouse PART No	STANCOR PART No	MERIT PART No	CHICAGO PART No	TRIAD PART No	NOTES
T7	7.1KΩ	3.4Ω	502Ω	V-9238-1	A-3878	A-2931	RO-301	S-7X	

SPEAKER

ITEM No.	RATINGS SIZE	FIELD	V. C. IMP.	Westinghouse PART No	VIKING PART No	QUAM PART No	NOTES
SP1	10"	PM	3.4Ω	V-9770-1	10J11	10A4A	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	Westinghouse PART No	MEISSNER PART No	MERIT PART No	MILLER PART No	NOTES
L1	Ant. Trans.	0Ω CT	0Ω					Low channel secondary-0Ω
L2	Ant. Coils	0Ω						
L3	UHF #1 Ant. Coil	0Ω						
L4	UHF #2 Ant. Coil	0Ω						Channel 13
L5	Ant. Coil	0Ω						
L6	Muter Coil	0Ω						
L7	Fil. Choke	0Ω						Channel 13
L8	RF Coils	0Ω						
L9	RF Coils	0Ω						Channel 13
L10	Mixer Grid Coil	0Ω						
L11	Mixer Grid Coils	0Ω						Channel 13
L12	Osc. Plate Coil	0Ω CT						Channel 13
L13	Osc. Coils	0Ω						
L14	Osc. Coil	0Ω						Channel 6
L15	Conv. Plate	.05Ω						
L16	1st. Video IF	0Ω		V-9882-7				
L17	Associated Sound Trap	0Ω		V-10771-1				
L18	Fil. Choke	0Ω		V-4886-2			4602	1.1 Microhenries
L19	2nd. Video IF Adj. Channel	.5Ω	.4Ω	V-9879				
L20	Sound Trap	0Ω		V-1077-1				
L21	Fil. Choke	0Ω		V-4886-2			4602	1.1 Microhenries
L22	3rd. Video IF	.5Ω	.4Ω	E-48T3				
L23	4th. Video IF	.5Ω	.5Ω	V-9880				
L24	Series Peaking Coil	1Ω		V-4886-1		TV-180	4624	14 Microhenries
L25	Series Peaking Coil	4.4Ω		V-9915-1	19-3093	TV-181	6177	100 Microhenries
L26	Shunt Peaking Coil	1Ω		V-4886-1		TV-180	4624	14 Microhenries
L27	4.5MC Trap	1.1Ω		V-9882-3	20-1004	TV-151	1470	
L28	Series Peaking Coil	5.5Ω		V-5902-1	19-3125	TV-184	4644	140 Microhenries
L29	Shunt Peaking Coil	7.5Ω		V-5902-5	19-3250	TV-185	6181	250 Microhenries
L30	Series Peaking Coil	1Ω		V-4886-1		TV-180	4624	14 Microhenries
L31	Fil. Choke	0Ω		V-4886-2			4602	1.1 Microhenries
L32	1st. Sound IF	.7Ω		V-9882-3	17-3400	TV-151	1470	
L33	2nd. Sound IF	1.1Ω		V-9882-2	17-3400	TV-151	1470	
L34	RF Choke	15Ω		V-9915-2			4648	350 Microhenries
L35	Quadrature Coil	5.5Ω		V-11396-1	17-1031 *			
L36	Horiz. Osc.	75Ω		V-8764	19-1578	TV-163	6210	

* Drill mounting holes.

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (I) CURRENT (000 °/.)	Westinghouse PART No.	STANCOR PART No	MERIT PART No	CHICAGO PART No	TRIAD PART No
L37	.230ADC	40Ω	1.34 Hy.	V-6471-3	C-3338 ①	C-3991 ①	TR-1733 ①	C-33X

① Drill one new mounting hole.

PARTS LIST AND DESCRIPTIONS (Continued)

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT	Westinghouse PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.
M1		V-11189			1159	8S35 ①	10

① Drill mounting hole on side of chassis.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Westinghouse PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	3AG	1/4A ⓐ 250V	V-6171-6	V-11966-1	312.250 (3AG 1/4A)	357001	AGC 1/4	4405

MISCELLANEOUS

ITEM No.	PART NAME	We stinghouse PART No.	NOTES
M3	RF Tuner	V-11333-1	
M4	RF Tuner (UHF)		Model H-803, used with Models H-746KU21 and H-747KU21
M5	Crystal Diode	V-10916-1	Video Detector (CK706, 1N64 or 1N60)
M6	Switch	V-11656-1	TV-Phono Selector
M7	Switch	V-5406	ABC Off/On
M8	Ion Trap	V-9784-5	
M9	Photo Tube		Type 1P41
B2	Trimmer Cap.	V-11228-1	Horiz. Mult. (5-40MMF)
	Cabinet	V-1295-1	Models H-746K21 and H-746KU21
	Cabinet	V-1295-2	Models H-747K21 and H-747KU21
	Back (Assy)	V-10962-18	
	Doors	V-8628	Matched pair (less hardware), Models H-746K21 and H-746KU21
	Doors	V-8629	Matched pair (less hardware), Models H-747K21 and H-747KU21
	Control Panel (assy)	V-11503-5	Models H-746K21 and H-746KU21
	Control Panel(assy)	V-11503-6	Models H-747K21 and H-747KU21
	Safety Glass	V-11505-2	
	Mask (Picture)	V-11584-1	Models H-746K21 and H-746KU21
	Mask (Picture)	V-11584-2	Models H-747K21 and H-747KU21
	Plate (Mask)	V-10932-1	Models H-746K21 and H-746KU21
	Plate (Mask)	V-10932-2	Models H-747K21 and H-747KU21
	Knob	V-11577-1	Off/On/Volume and picture (2 used) Models H-476K21 and H-746KU21
	Knob	V-11577-2	Off/On/Volume and picture (2 used) Models H-747K21 and H-747KU21
	Knob	V-11513-1	Fine tuning, Models H-746K21 and H-746KU21
	Knob	V-11513-2	Fine Tuning, Models H-747K21 and H-747KU21
	Knob	V-11512-2	Channel Selector
	Knob	V-9547-1	TV-Phono Selector

TROUBLE SHOOTING AIDS (CONT.)

POWER

SMALL RASTER WEAK SOUND

Check by stubstitution V21 and V22. Check B+ filter network.

DIM PICTURE

Check by substitution V21 and V22. Check B+ filter network. Proceed as outlined under "Insufficient High Voltage".

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution V20, V19, V18 and V17. Check waveform at W15.

If Satisfactory	If Unsatisfactory
Check R130, C114, T2, yoke and other associated circuit components.	Check C108, C109 and other components associated with V17 and V18.

INSUFFICIENT HIGH VOLTAGE

Check by substitution V17, V18, V19, V20, V21 and V22. Proceed as outlined under "Loss of High Voltage".

BLOOMING

Check by substitution V18, V19 and V20. Check R130, C114, T2, yoke and other associated circuit components. Check picture tube.

GENERAL

RASTER SOUND NO PICTURE

See "Loss of Video"

RASTER SNOWY PICTURE WEAK SOUND

Check by substitution V1, V2, V3, V4 and V5. Check video IF alignment and components.

DIM PICTURE

Check setting of ABC Sensivity Control. Check V7 and photo electric cell. ABC circuit may be check by tuning ABC switch off and manually adjusting brightness.

INTERMITTENT STREAKS

Check high voltage section for corona discharge and arcing. Check C114 for break down.

TOTAL LOSS OF SYNC

Check by substitution V12, V13 and V14. Check associated components.

DEAD SET

Check AC interlock assembly. Check switch on volume control. Check T1.

POOR FOCUS

Check adjustment of focus control. Check by substitution V21 and V22. Check potentials applied to picture tube. If satisfactory, check picture tube.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this receiving equipment.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF Tuner Oscillator Circuit may be accomplished by removing the channel selector and fine tuning knobs.

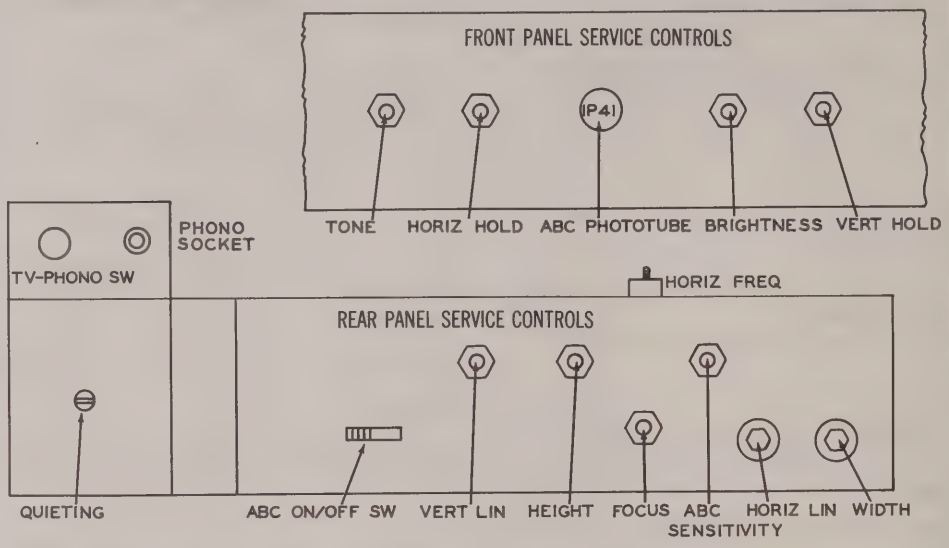
PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass, remove four wood screws holding wood strip across top of safety glass. Remove wood strip and safety glass by tilting forward and lifting out. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION



SPECIAL ADJUSTMENTS - AUTOMATIC BRIGHTNESS CONTROL SENSITIVITY

To adjust the ABC Sensitivity, set the ABC switch to the "Off" position. Adjust the Brightness and Picture Control for a normal picture in a normal lighted room. Set the ABC switch to the "On" position and place an incandescent lamp about five feet in front of the receiver. Adjust the ABC Sensitivity Control clockwise while turning the lamp on and off, until a setting of the control is found where the picture brightness and contrast changes in proportion the change in lighting.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to set. Adjustment is located on top of chassis. Set the horizontal hold control at the center of its range and adjust the horizontal oscillator slug (L36) until picture synchronizes horizontally. (For location, see tube placement chart).

SOUND IF DETECTOR BUZZ ADJUSTMENT - QUIETING CONTROL (Rear apron of chassis)

If necessary, adjust slightly for minimum noise in receiver output. See sound IF alignment using TV signal if satisfactory, results cannot be obtained.

FUSES

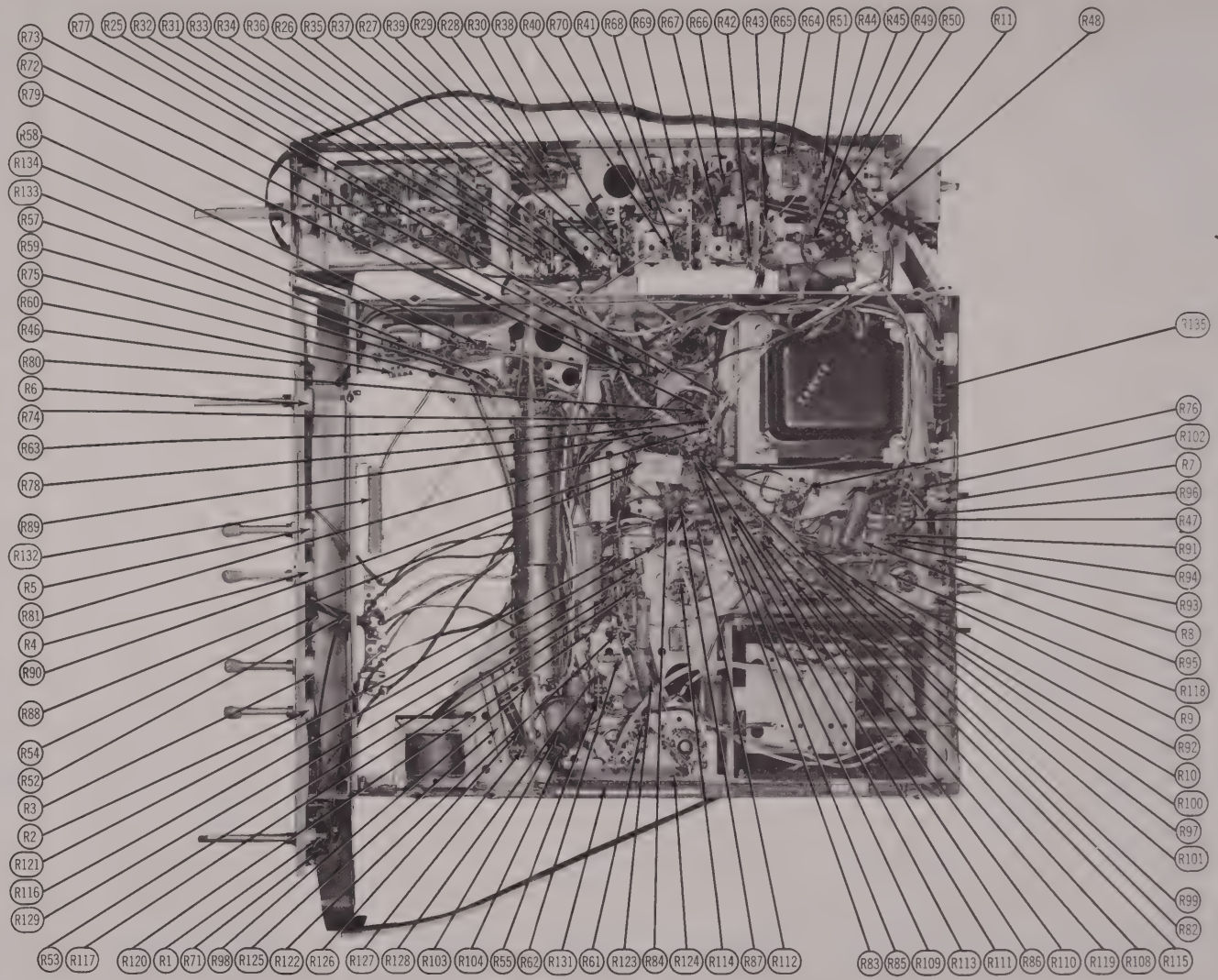
One fuse is used for horizontal sweep circuit protection. (For location, see tube placement chart).

CENTERING

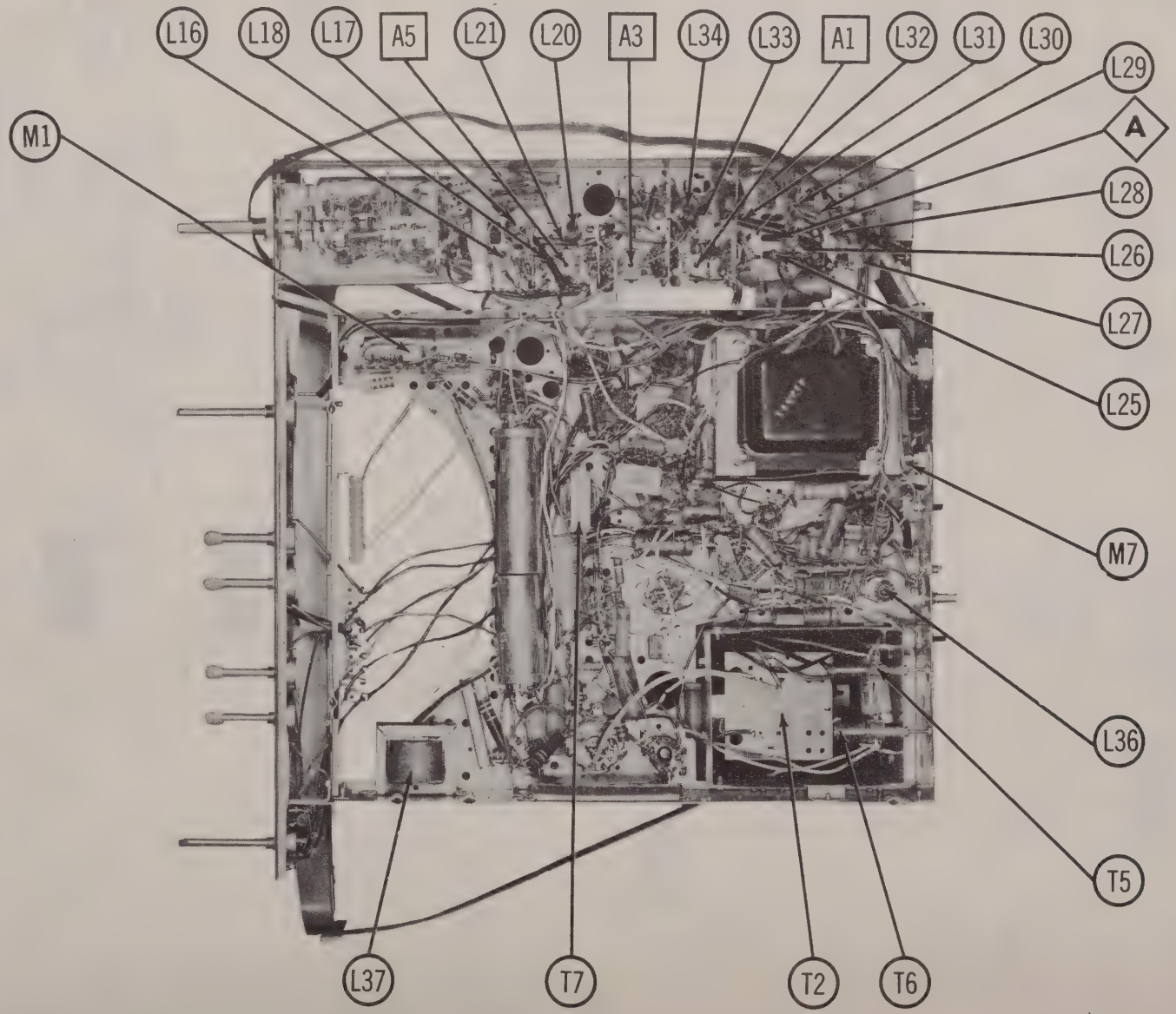
Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube , located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered

DISASSEMBLY INSTRUCTIONS

1. Remove 4 push on type control knobs from front panel.
2. Disconnect built-in antenna. Remove 8 wood screws. Disconnect transmission line. Remove rear cover.
3. Disconnect speaker.
4. Loosen clamp holding transmission line. Remove one side of built-in antenna from chassis.
5. Remove phototube plug.
6. Remove 6 chassis bolts. Remove chassis.
7. Remove 4 speaker nuts. Remove speaker.



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

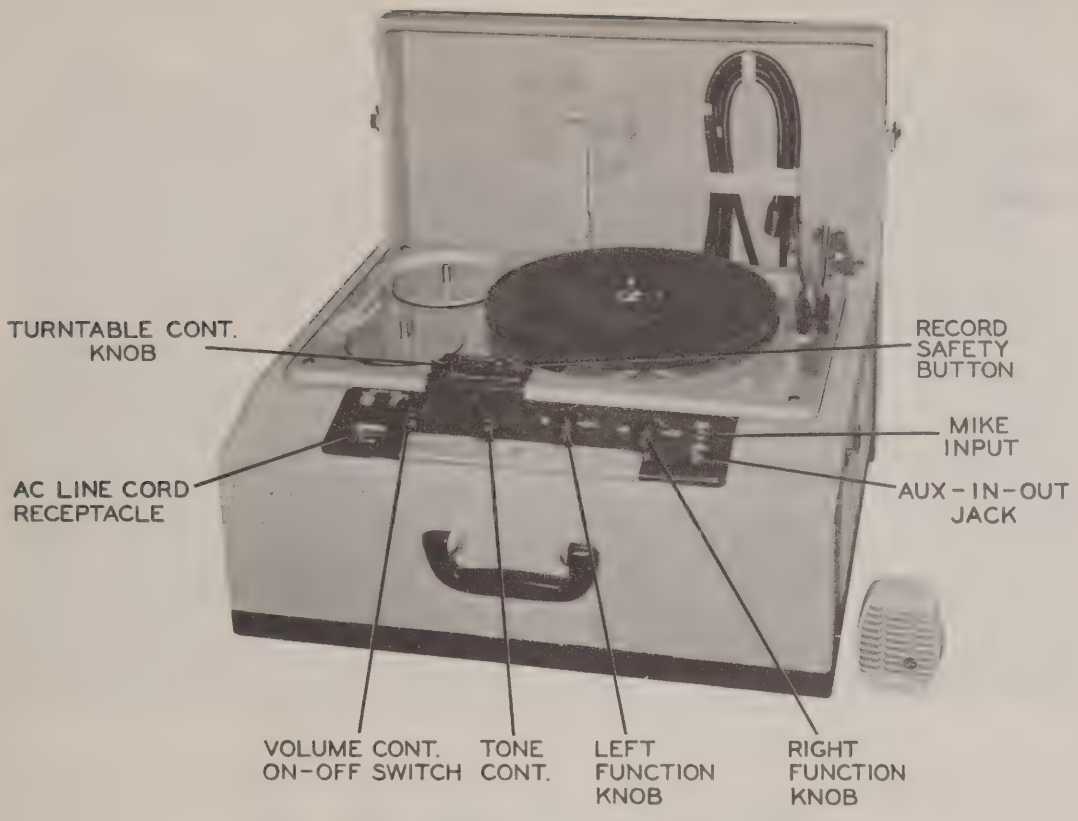


Figure 1

GENERAL INFORMATION

The Recordio Model 3C10 is a two-way combination disc and tape recorder. Recordings can be made on tape or disc, from microphone or radio, and recordings can be made from tape to disc or disc to tape on the same machine. This Recordio is also a phonograph, public address system, and provision is incorporated whereby recordings can be made from an external radio or played back through the same radio. An input jack for recording telephone conversations is also provided. This mechanism uses a combination playback and recording arm and a crystal playback cartridge.

The Model 3C10 is designed for use with either standard 3" or 5" reels of 1/4" recording tape. The recording tape travels past the recording head at 3.75" per second. The mechanism records on two tracks. A 5" reel contains approximately 600 feet of tape, which gives a total recording time of over one hour, when using both tracks of the tape.

CAUTION: Do Not Use on Direct Current. Check Serial Nameplate on Rear of Machine for Proper Current and Voltage.

Manufactured by:

Wilcox-Gay Corporation
Brooklyn, N. Y. Charlotte, Mich.

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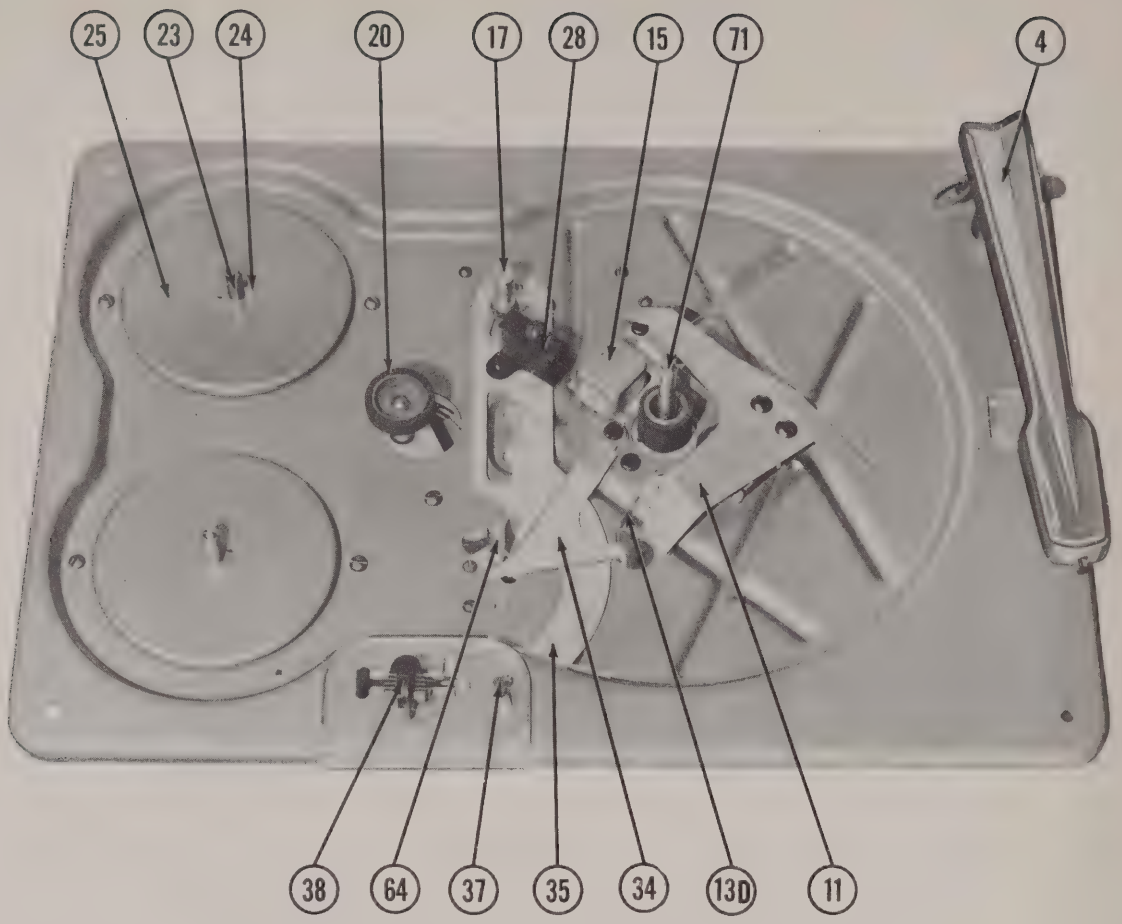


Figure 2

OPERATING INSTRUCTIONS

1. With control knob (38) in the "Off" position, insert the AC power cord into the AC Line receptacle.

2. Plug the AC cord into a convenient wall receptacle of the proper rating.

Threading of Tape-

NOTE: Do not remove turntable when threading tape.

1. Place a reel (3" or 5" diameter) of recording tape on the rear reel pan (25) with one slot of the reel engaging key lug (24). Be sure the magnetic coated side of the tape faces inward on the reel.

2. Place an empty reel on the front reel pan making sure that the slot in the reel engages the key lug on the reel pan.

3. Unreel about two (2) feet of tape and place the tape around and under the turntable and then insert the end of the tape into one of the radial slots in the hub of the empty reel. Secure the tape by spinning the reel clockwise two or three turns. When the slack is taken up, the tape will slide under the turntable and align itself.

To Record on Tape-

1. Turn Volume Control to the right until a click is heard and allow about thirty seconds for the unit to warm up.

2. Set left function switch at Record Tape.

3. Select desired input on right hand function knob.

4. Move control knob (38) forward, slightly, and then to the right, until it is aligned with the "Record" position. The control knob (38) is then pushed and, at the same time, the record safety button (37) is pulled forward to permit full engagement of control knob (38) in the "Record" position.

NOTE: Correct recording volume is very important. Adjust the volume control so that the Normal indicator just flashes. When the control is advanced too far the Overload indicator will flash and the recording will be distorted.

When in the "Record" position, erase head (28) contacts the recording tape and erases the lower track just before it passes the recording head (15). Only the lower track of the tape is recorded on or played back.

When the rear reel is empty and it is desired to record the upper half of the tape, the front reel, which is now the full one, must be removed from the pan,

turned over, and transferred to the rear reel pan, making sure the slot in the reel engages key lug (24). The empty reel must be transferred to the front reel pan. Thread the tape as previously described, and proceed with the recording in the same manner.

To Rewind Tape-

To rewind the tape to the start of the recording, shift control knob (38) to the position marked "Reverse". Push the control knob into the reverse slot as far as possible. The mechanism is now rewinding.

To Stop The Tape-

The tape may be stopped at any point by shifting control knob (38) to the position marked "Off".

To Play Tape-

1. Set left function knob to Play Speaker.

2. Set right function knob to Play Tape.

3. Turn Volume to "On" and allow about 30 seconds for tubes to warm up.

4. Slide control knob (38) to position marked "Playback".

5. Adjust Volume and Tone controls for most pleasing reproduction.

Fast-Forward-

If a recording near the end of the tape is desired, the desired portion may be reached rapidly by moving control knob (38) to the "Forward" position.

Splicing and Editing-

NOTE: Since it is impossible to edit and splice one "track" without affecting the other, recordings, which are to be edited should be limited to one track only.

1. The tape may be edited by cutting out unwanted portions, or by joining selections into another sequence. Announcements may be inserted between selections, etc. Unused sections of tape can be spliced together for re-use.

2. For best results, cut tape at a slight diagonal, join ends together with splicing tape on the glossy side and trim off any excess width.

To Use As Phonograph-

1. Set left function knob to Play Speaker and right function knob to Play Disc.

2. Turn Volume to On and allow about thirty seconds for tubes to warm up.

3. Slide control knob (38) to position marked "Phono".

4. With Record-Playback arm pivot shaft assembly (5) in its downward position, carefully place needle in first groove of record.

5. Adjust Volume and Tone controls for most pleasing reproduction.

To Record on Disc-

1. Place a blank recording disc on the turntable so that the record driving pin engages the small hole near the center of the record.

2. Move the phonograph arm so that the point of the cutting needle is correctly positioned for cutting the first groove, about one-fourth (1/4) of an inch in from the edge of the record. Raise rear of record-playback arm by means of the lift lever until it locks into record position.

3. Set left function knob at Record Disc.

4. Select desired input on right function knob (Mike or Aux).

5. Slide control knob (38) to position marked "Phono".

6. Adjust the volume control so that the Normal indicator just flashes. When the control is advanced too far the Overload indicator will flash and the recording will be distorted.

Recording From Microphone-

1. Set right function knob at Use-Mike.

2. Proceed as in "To Record on Tape" or "To Record on Disc".

To Record From Disc to Tape-

1. Set left function knob at Record Tape.

2. Set right function knob at Play Disc.

3. Pull safety latch (37) forward and slide control knob (38) to "Record".

4. Adjust the volume control so that the Normal indicator just flashes. When the control is advanced too far the Overload indicator will flash and the recording will be distorted.

To Record From Tape to Disc-

1. Set right function knob at Play Tape.

2. Set left function knob at Record Disc.

3. Slide control knob (38) to Playback.

4. Adjust the volume control so that the Normal indicator just flashes. When the control is advanced too far the Overload indicator will flash and the recording will be distorted.

To Use As Public Address-

1. Set Volume at On.

2. Set left function knob at Play Speaker.

3. Set right function knob at Use Mike.

4. Adjust Volume and Tone controls to suit.

CAUTION: Use the microphone as far away from the Recordio as possible to avoid "feed-back" squeal.

Telephone Recording-

Telephone recordings can be made by connecting to the Aux-In-Out jack from the telephone line. If conversations are to be recorded, it is necessary that you contact your local telephone company who will furnish the correct junction box, warning signal device, and make all proper connections. After the connections have been made, proceed as in "To Record on Tape".

To Record From Radio or TV Receiver-

Recordings can be made from a radio or television receiver by placing the microphone near the speaker of the radio or TV; however, this type of recording may not be satisfactory as other sounds may be picked up by the microphone which as a result will be recorded on the tape. A superior quality recording can be made by connecting the Aux-In-Out jack on the Recordio through a shielded lead to the voice coil terminals on the radio or TV speaker. Proceed with recording as follows:

1. Set left function knob at Record Tape.

2. Set right function knob at Use Aux.

3. Adjust the volume control so that the Normal indicator just flashes. When the control is advanced too far the Overload indicator will flash and the recording will be distorted.

To Record From External Phonograph-

1. Connect the Aux-In-Out jack on the Recordio through a shielded lead to the pickup leads on the external phonograph.

2. Proceed with recording as described in "To Record from Radio or TV Receiver".

NOTE: Should a hum develope from the above connection, reverse the connections at the pick-up leads.

To Play Recordio Through External Amplifier-

1. Connect Aux-In-Out jack on Recordio through a shielded lead on a phone plug to the phonograph input circuit of the external amplifier, making sure the sleeve and ground are common.

2. Set left function knob at Play Speaker.

3. Set right function knob to Play Tape, Play Disc, or Use Mike, whichever function is desired.

4. Slide control knob (38) to Playback for playing of tape or to Phono for playing of disc.

MECHANICAL FUNCTION

The drive mechanism includes the following: A single motor (63), which drives both the turntable and reeling mechanism through the media of drive belts (52) and (70) and the drive pulley (68). The turntable in turn, drives the capstan (71). These belts are coupled to the drive pulley (62) which is fastened to the motor shaft.

Operation of the Control Knob (38)
"Off" Position-

When the control knob (38) is in the "Off" position, the shift lever (35), which is fastened to the control knob, is moved against the pin of the switch assembly (64), shutting off the motor power.

"Phono" Position-

With the control knob in the "Phono" position, the shift lever (35) is moved away from the switch pin (64). The switch actuator lever (34) then moves against the switch pin, tilting the mercury switch (64A) which turns on the motor power. The switch actuating lever (34) is actuated by spring (46). The switch actuating lever (34) is pushed away from the switch pin (64) by the shift lever (35) when in the "Off-Record and Playback" positions.

"Reverse and Forward" Positions-

When the shift lever (35) is moved to the "Reverse" position, it depresses the lift lever (60) disengaging the front reel from the clutch assembly. The rear pan engages the clutch spring, thus operating the mechanism for Fast Rewind.

For Fast Forward, the position of the reel pans are reversed. The Forward speed is approximately 20 to 1 over the 3-3/4" per second normal recording or playback tape speed.

The Fast Forward and Rewind are accomplished due to the fact that when the shift lever (35) is in these positions - "Forward-Reverse", the pinch roller (12), pressure pad and spring (13B) do not contact the tape which gives free movement to reels.

"Record and Playback"-

When the control knob (38) is in either "Record" or "Playback" position, the shift lever (35) contacts the pressure pad and pinch roller assembly actuating spring (13D) (see Figure 2). This brings the pinch roller (12) in firm contact with the tape and the driving capstan (71). The pressure pad (13B) which is also part of this assembly, is brought into contact with the recording tape and is held firmly against the recording head (15). This assures firm contact between the driving capstan and the tape, as well as holding the recording tape firmly against the recording gap, which is part of the recording head. The driving capstan (71) is, in turn, driven by the large turntable, which acts as a flywheel, thus minimizing any flutter or "wow" effect as a result of changing velocity of the tape.

Automatic Shut Off-

When the mechanism is in the "Record" or "Playback" position, the shift lever (35) and switch actuating lever (34) are moved clear of the switch (64). The tension of the tape then holds the switch in the "On" position; however, when all the tape is wound on the forward reel, the mercury switch is permitted to tip in such a manner as to open the motor circuit, thus automatically stopping the unit.

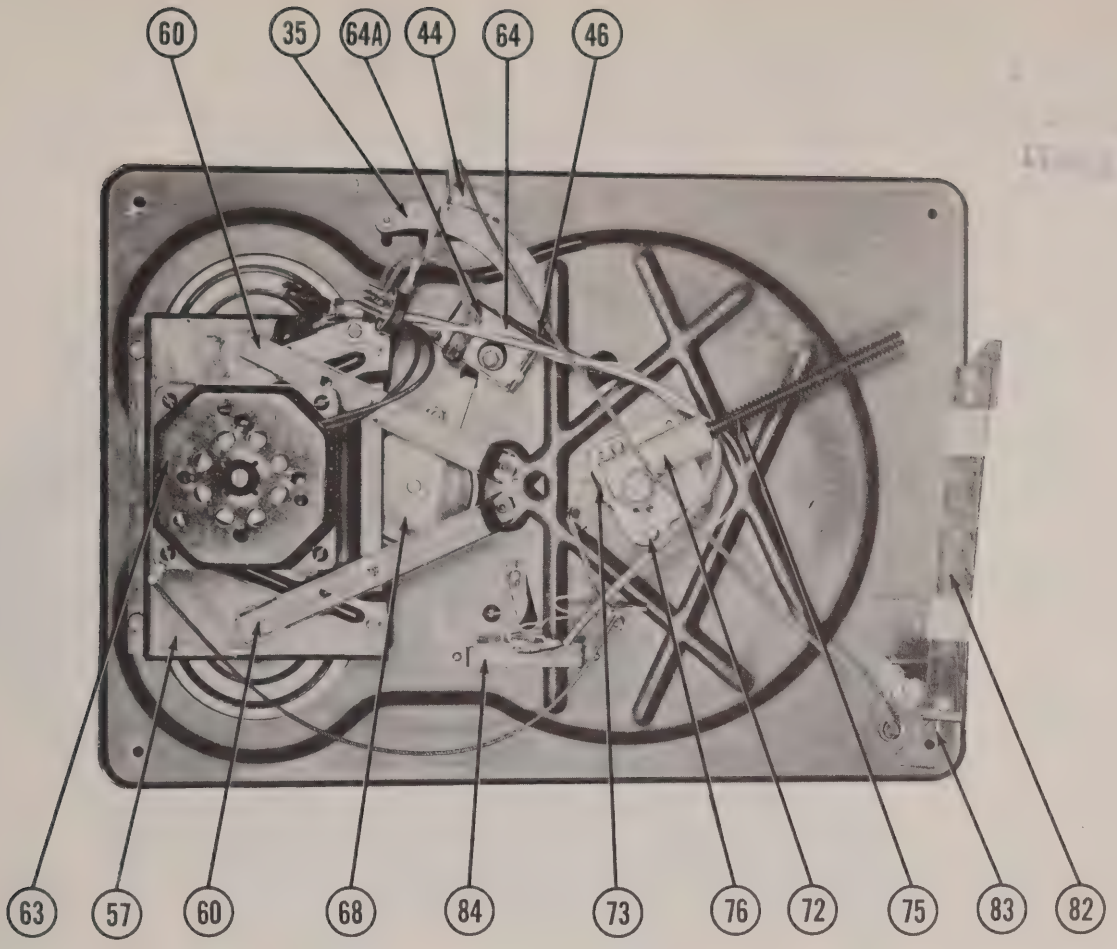


Figure 3

TROUBLES AND ADJUSTMENTS

Mechanism Does Not Turn On In Phono, Reverse or Forward Position-

1. Switch actuating spring (46) loose or broken.

(a) Switch actuating spring must be connected to the switch actuating lever (34) so that the actuating lever may tilt the mercury switch (64A) to the "On" position. Connect, or if necessary, replace spring (46).

Turntable Rotates In "Off" Position But Will Not Rotate In Any Other Position-

1. Mercury switch (64A) turned in wrong direction. Remove mercury switch from clip of switch bracket and reverse its position (see Figure 3).

Reel Pans (25) Fail To Rotate To Wind Tape-

1. Lift levers (60) out of adjustment.

(a) In the "Forward" position, the rear reel pan must be raised to such a position that it clears clutch plate (51). At the same time, the front reel pan must be lowered to contact clutch plate (49), and the front lift lever (60) must clear the lower end of the front reel pan shaft by approximately 1/32" to 1/16". To adjust the front lift lever (60), bend the short unflanged section of the lever immediately under the front reel pan shaft until a space of 1/32" to 1/16" clearance is obtained.

(b) In "Reverse" position, the rear reel pan is lowered and the front pan is raised. Adjust the rear lift lever (60) in the same manner as described above, leaving a clearance of 1/32" to 1/16".

NOTE: In the "Record" and "Playback positions, the lift levers must clear both reel pan shafts so that both the pans will contact the clutch plates (49) and (51).

Fails To Record Or Playback Properly-

1. Pressure pad spring (13B) loose.

(a) Check the screws that hold the pressure pad spring (13B) to the mounting plate to see if they are tight.

2. Pressure pad worn or missing.

(a) If the pressure pad is worn or is out of adjustment, it may be corrected as follows:

Remove pinch roller cover (11).

Loosen the lock nut on the screw of the pressure pad and spring assembly.

Set control lever (38) in the "Record" position.

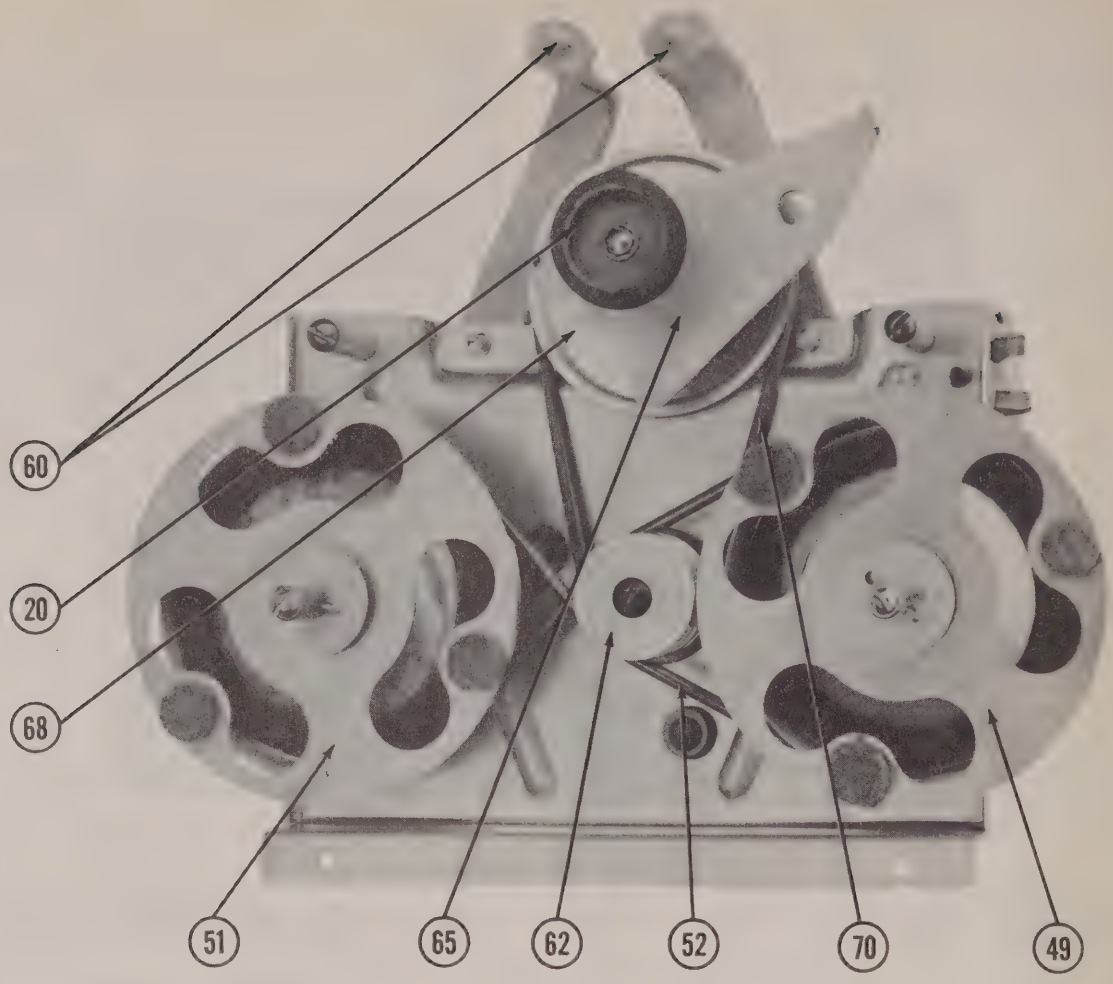


Figure 4

Turn the pressure pad adjusting screw in against the pressure pad spring until the pressure pad just contacts the recording head. Then turn the screw 1/2 to 3/4 turn clockwise and tighten the lock nut.

Replace pinch roller cover (11).

(b) If the pressure pad is missing, replace the pad and adjust as explained above.

3. Spring (13D) loose or broken.

(a) If the pressure pad actuating spring (13D) is broken or if its mounting screw is loose, allowing the spring to slip over the boss on the pinch roller mounting plate, the pinch roller mounting plate will not be pivoted inward when the mechanism is in the "Record" or "Playback" position. If this is true, the tape will not be held against the capstan and recording head.

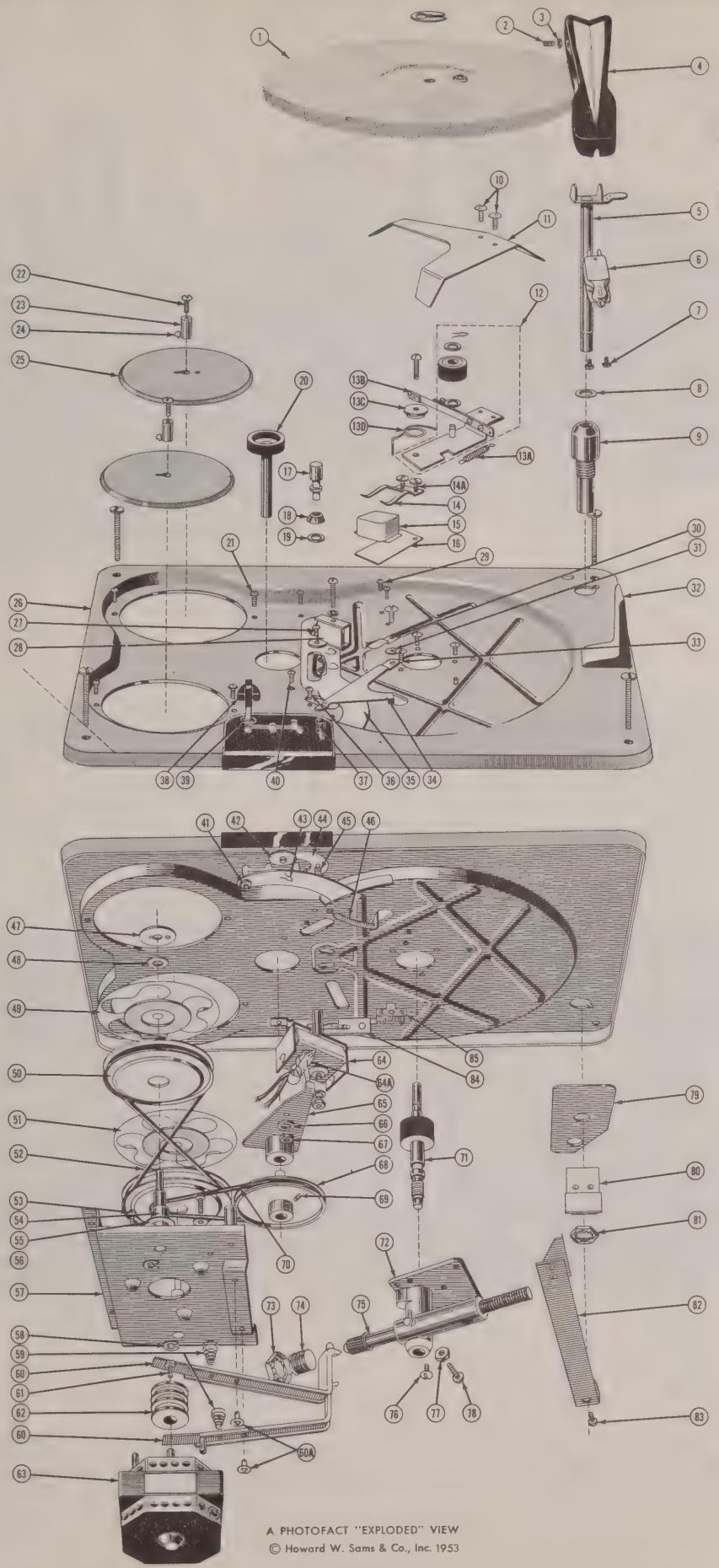
"Wow" During Disc Recording Operation-

1. Follower arm (82) not engaging lead screw (75) properly.

(a) When lifting the rear section of the pickup cutter arm assembly, the follower arm (82) should engage the lead screw (75) before the rear of the pickup cutter arm locks in a raised position. This engagement should be at a point between 1/8" and 1/4" before the pickup cutter arm locks in the record position. If it is necessary to adjust this point of engagement, it can be accomplished by slightly bending the follower arm (82). If the follower arm engages the lead screw too tightly, an excessive load will be put on the lead screw, thus injecting "Wow" in the recording. If the engagement is not sufficiently heavy, there is a possibility of grouping, which is the result of the follower arm lifting up on the threads of the lead screw rather than moving along in a smooth and continuous pattern.

Tracking of Tape Through Recording Head-

Tracking of the tape through the recording head (15) is controlled by tipping the tape capstan (71) slightly with the two adjusting screws (76) located under the mounting flange of the suxiliary shaft housing (72) under the base plate (26) of the machine. The capstan should be adjusted so that the tape tracks in the center or toward the top of the guide slot in the recording head (15) - never toward the bottom of the guide slot.



A PHOTOFACT "EXPLODED" VIEW

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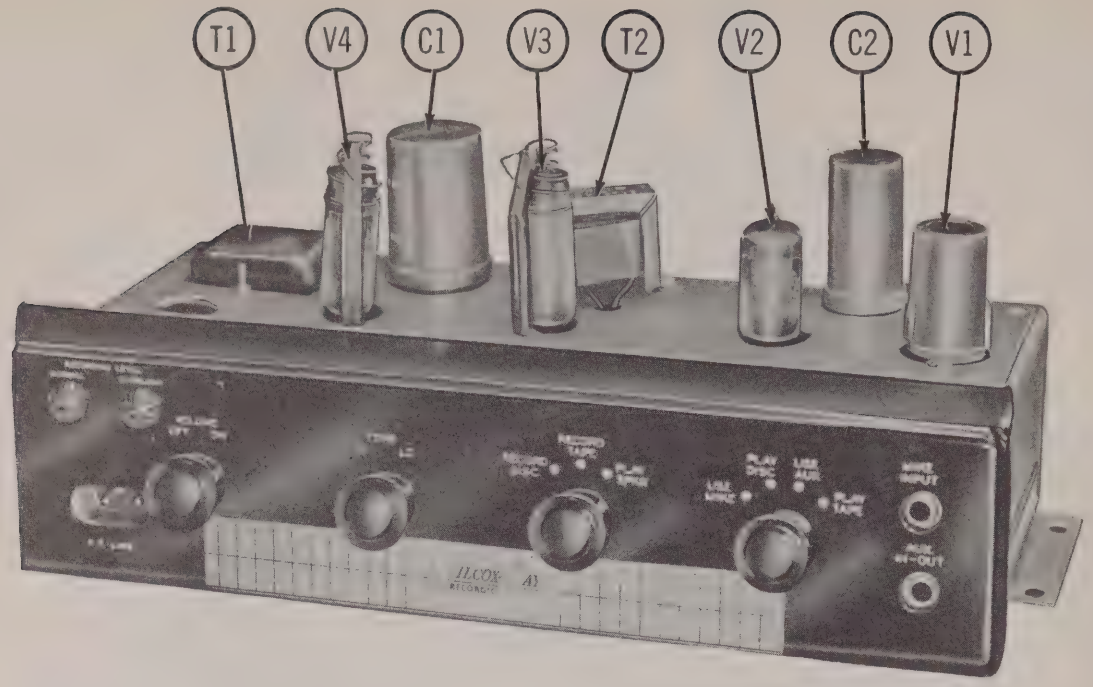


Figure 5

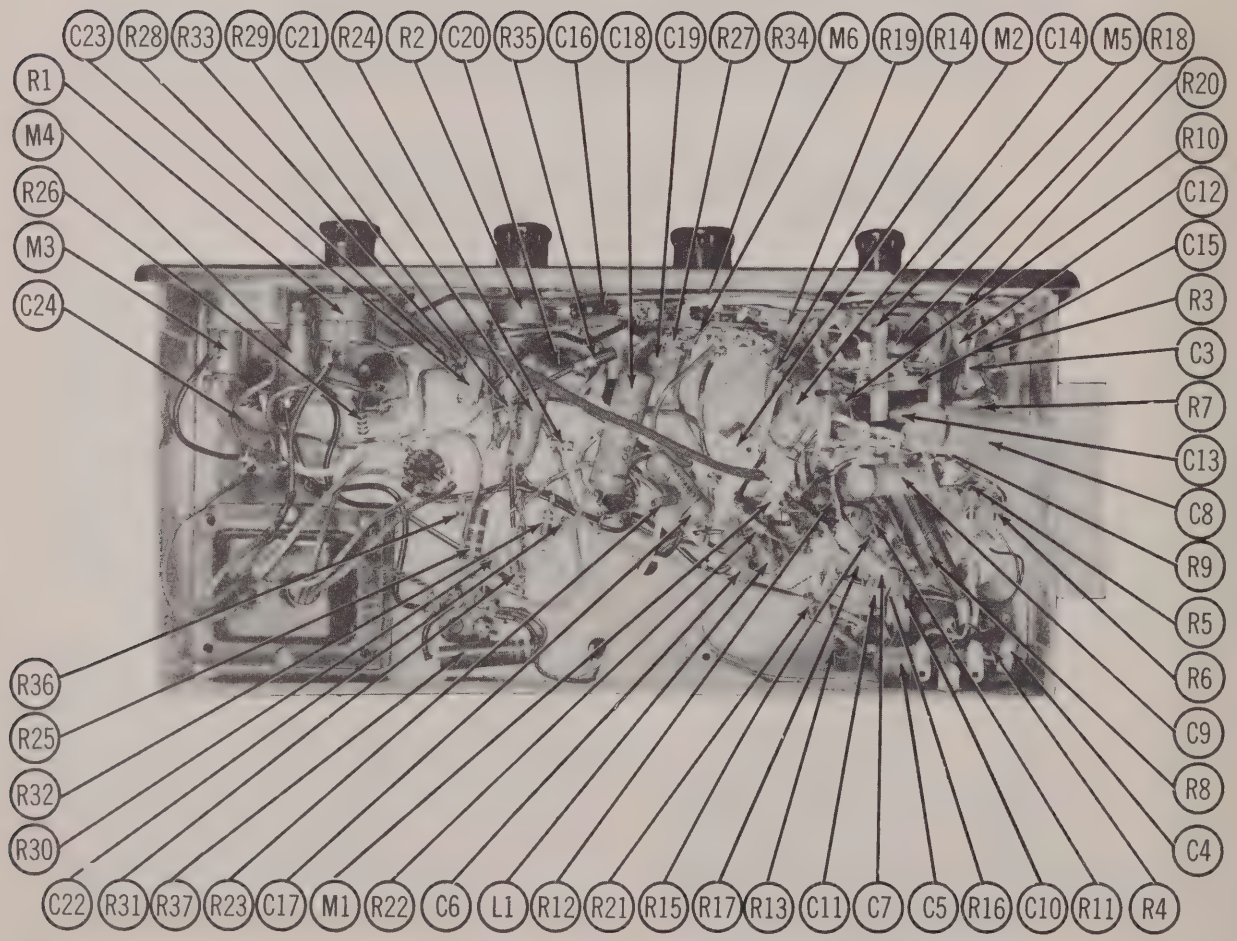
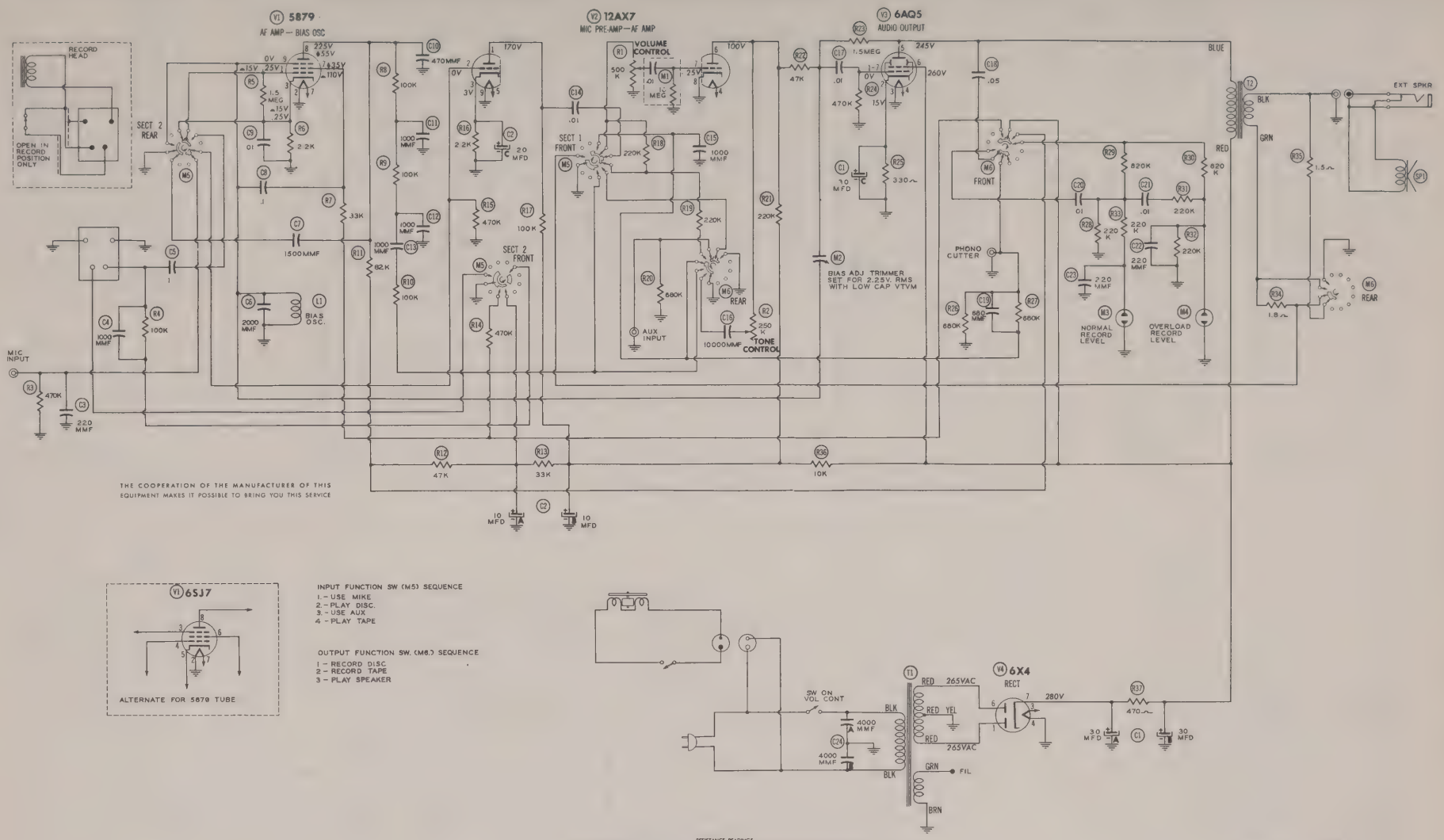


Figure 6



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	5879	2.2KΩ ±1.5Meg	INF	2.2KΩ ±0Ω	0Ω	.2Ω	0Ω	±540KΩ †±33KΩ	170KΩ †±78KΩ	47Ω ±0Ω
V 2	12AX7	235KΩ †110KΩ	±470KΩ	2.2KΩ	.3Ω	.3Ω	1230KΩ	10Meg	0Ω	0Ω
V 3	6AQ5	470KΩ	330Ω	0Ω	.3Ω	1850Ω	1470Ω	470KΩ		
V 4	6X4	285Ω	INF	0Ω	.2Ω	INF	290Ω	1Meg		

ALL MEASUREMENTS TAKEN WITH M5 IN "USE MIKE" POSITION AND M6 IN "PLAY SPEAKER" POSITION UNLESS OTHERWISE SPECIFIED
* M5 IN "PLAY TAPE" POSITION
▲ M5 IN "RECORD TAPE" POSITION

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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WILCOX-GAY
MODEL 3C10

LUBRICATION

All rotating parts are provided with generous size oilite bearings which are factory lubricated and should need no further attention.

An occasional cleaning out of foreign matter from beneath the turntable is desirable, and when this is done, a small drop of oil on the sliding lever members is advisable. The rubber capstan on the turntable shaft should also be cleaned occasionally with alcohol or lighter fluid on a soft piece of cloth. To remove turntable - push turntable holding washer from turntable shaft, then tap top of shaft lightly, at the same time lifting the edge of the turntable.

The felt pads on the clutch springs (49-51) are saturated with SAE40 oil. The shearing of the oil in the pad is partially responsible for the drive of the clutches; therefore, do not over-saturate the felt. There is sufficient oil in the felt when medium finger pressure on the felt causes a small bead of oil to appear along the edge of the felt. With a release of the pressure all the oil should be reabsorbed by the felt.

If re-oiling of the clutch pads becomes necessary, the pads should be thoroughly cleaned by means of a naphtha or carbon-tet bath. After the pads have been cleaned, press firmly with a blotter to remove the solvent.

ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
V1A	69-2222	5879, AF Amp., Bias Osc.	R7	53-2641	Resistor, 33KΩ, 1/2 Watt 10%
V1B		6SJ7, AF Amp., Bias Osc.	R8	53-2053	Resistor, 100KΩ, 1/2 Watt 10%
V2	69-2175	12AX7, Mike Pre-Amp., AF Amp.	R9	53-2053	Resistor, 100KΩ, 1/2 Watt 10%
V3	69-2171	6AQ5, Power Output	R10	53-2053	Resistor, 100KΩ, 1/2 Watt 10%
V4	69-2172	6X4, Rectifier	R11	53-2627	Resistor, 82KΩ, 1/2 Watt 10%
C1A	18-2082	Elect. Cap., 30mfd. @ 350V.	R12	53-2736	Resistor, 47KΩ, 1/2 Watt 10%
C1B		Elect. Cap., 30mfd. @ 350V.	R13	53-2641	Resistor, 33KΩ, 1/2 Watt 10%
C1C		Elect. Cap., 30mfd. @ 25V.	R14	53-2596	Resistor, 470KΩ, 1/2 Watt 10%
C2A	18-2083	Elect. Cap., 10mfd. @ 300V.	R15	53-2596	Resistor, 470KΩ, 1/2 Watt 10%
C2B		Elect. Cap., 10mfd. @ 300V.	R16	53-2620	Resistor, 2.2KΩ, 1/2 Watt 10%
C2C		Elect. Cap., 20mfd. @ 25V.	R17	53-2053	Resistor, 100KΩ, 1/2 Watt 10%
C3	76-2292	Ceramic Cap., 220mmf. @ 500V.	R18	53-2551	Resistor, 220KΩ, 1/2 Watt 10%
C4	76-2207	Mica Cap., 1000mmf. @ 500V.	R19	53-2551	Resistor, 220KΩ, 1/2 Watt 10%
C5	75-2005	Paper Cap., .1mfd. @ 200V.	R20	53-2598	Resistor, 680KΩ, 1/2 Watt 10%
C6	17-3137-A	Ceramic Cap., 2000mmf. (Includes item L1)	R21	53-2551	Resistor, 220KΩ, 1/2 Watt 10%
			R22	53-2516	Resistor, 47KΩ, 1/2 Watt 10%
C7	76-2103	Mica Cap., 1500mmf. @ 600V., 10%	R23	53-2043	Resistor, 1.5Meg, 1/2 Watt 10%
C8	75-2006	Paper Cap., .1mfd. @ 600V.	R24	53-2596	Resistor, 470KΩ, 1/2 Watt 10%
C9	75-797	Paper Cap., .01mfd. @ 600V.	R25	53-2561	Resistor, 330Ω, 1 Watt 10%
C10	76-2208	Mica Cap., 470mmf. @ 500V.	R26	53-2598	Resistor, 680KΩ, 1/2 Watt 10%
C11	76-2207	Mica Cap., 1000mmf. @ 500V.	R27	53-2598	Resistor, 680KΩ, 1/2 Watt 10%
C12	76-2207	Mica Cap., 1000mmf. @ 500V.	R28	53-2551	Resistor, 220KΩ, 1/2 Watt 10%
C13	76-2207	Mica Cap., 1000mmf. @ 500V.	R29	53-2764	Resistor, 820KΩ, 1/2 Watt 10%
C14	75-797	Paper Cap., .01mfd. @ 600V.	R30	53-2764	Resistor, 820KΩ, 1/2 Watt 10%
C15	76-2234	Ceramic Cap., 1000mmf.	R31	53-2551	Resistor, 220KΩ, 1/2 Watt 10%
C16	76-2225	Ceramic Cap., 10,000mmf.	R32	53-2551	Resistor, 220KΩ, 1/2 Watt 10%
C17	75-797	Paper Cap., .01mfd. @ 600V.	R33	53-2551	Resistor, 220KΩ, 1/2 Watt 10%
C18	75-2045	Paper Cap., .05mfd. @ 400V.	R34	53-2638	Resistor, 1.8Ω, 1/2 Watt 10%
C19	76-2293	Ceramic Cap., 680mmf. @ 500V. 10%	R35	53-2639	Resistor, 1.5Ω, 1/2 Watt 10%
			R36	53-2268	Resistor, 10KΩ, 1/2 Watt 10%
C20	75-797	Paper Cap., .01mfd. @ 600V.	R37	53-2661	Resistor, 470Ω, 2 Watt 20%
C21	75-2089	Paper Cap., .01mfd. @ 400V.			
C22	76-2292	Ceramic Cap., 220mmf. @ 500V.	L1	17-3137-A	Bias Osc. Tank Assembly (Includes C6)
C23	76-2209	Mica Cap., 220mmf. @ 500V.			
C24A	76-2295	Dual Disc Ceramic, 4000mmf. @ 400V.	T1	80-2186	Power Transformer
			T2	81-2106-2	Output Transformer
C24B		Dual Disc Ceramic, 4000mmf. @ 400V.	SP1	30.335	Speaker, 6 X 9 PM (Alternate 5 X 7 PM Speaker Part No. 64-2094)
R1	19-2182-5	Volume Cont. & On-Off Sw., 500KΩ	M1	147-1	C-R Multiplate (.01mfd. & 10Meg.)
R2	19-2181-5	Tone Cont., 250KΩ	M2	78-2058	Trimmer Cap. (10-160mmf.)
R3	53-2596	Resistor, 470KΩ, 1/2 Watt 10%	M3	45-2036	Neon Lamp, Type NE51
R4	53-2053	Resistor, 100KΩ, 1/2 Watt 10%	M4	45-2036	Neon Lamp, Type NE51
R5	53-2043	Resistor, 1.5 Meg. 1/2 Watt 10%	M5	66-3033	Input Function Switch
R6	53-2620	Resistor, 2.2KΩ, 1/2 Watt 10%	M6	66-3032	Output Function Switch

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	64427	10" Turntable Complete	46	25124	Spring (used on item 64)
2	11509	Set Screw, Cone Point	47		Keyed Washer
3	16207	Lock Nut	48		Washer
4	25112	Tone Arm, only	49	25174	Clutch Plate Front Assembly
5	25108	Pivot Shaft Assembly	50	25019	Reel Pan & Clutch Drive Sheave
6	25113	Pickup Cartridge (Shure Bros. LP89L)	51	25176	Clutch Plate Rear Assembly
7	12098	Cartridge Mounting Screw	52	25029	Reel Drive Belt (21" Long)
8	25168	Felt Washer	53		Screw (used to mount motor)
9	25126	Tone Arm Pivot Post Bushing	54	25037	Reel Shaft (used on Reel Platform Assembly)
10	22903	Screw (used to mount & adjust item 11)			
11	25193	Pinch Roller Cover Plate	55	25038	Washer (used on Reel Platform Assembly)
12	25192	Pinch Roller Assembly, Complete			
13A	30214	Spring for Pinch Roller Mounting Plate	56	22861	Nut (used to mount Sub-Chassis)
13B	25182	Pressure Pad & Spring Assembly	57	25013	Sub-Chassis (used to mount Motor, Reel Pans and Clutches)
13C	25177	Shoulder Bushing			
13D	25178	Pressure Pad Actuating Spring	58	25127	"C" Washer (used to lock item 54)
14	25118	Spring Clip (used to mount Recording Head)	59	25091	Spring (used with item 60)
			60	25084	Lift Lever
14A	11598	Screw (used to mount Recording Head)	60A	25088	Tri-Mount Stud
15	25116	Tape Recording Head (Shure Bros. TR6)	61	22903	Screw (used to mount item 62
			62	25028	Drive Pulley, Mounts on Motor 115V. AC, 60 Cycle
16	25117	Locating Plate, Record Head			
17	25132	Tape Guide Post	63	23235	Motor Assembly, 115V., AC, 60 Cycles
18	25131	Rubber Bushing		47-2088	Motor Assembly, 115V., AC, 50 Cycles
19	25157	Washer	64	25067	Shut-off Switch Assembly (less Mercury Switch)
20	25049	Turntable Drive Wheel			
21	22376	Screw (used to mount Sub-Chassis)	64A	25129	Mercury Switch
22	5871	Screw	65	25054	Drive Wheel Plate & Bearing Assembly
23	25034	Reel Sleeve Bushing			
24	25036	Key Lug	66	25119	Shoulder Washer
25	25039	Reel Pan	67	22861	Hex Nut
26	25003	Base Plate (complete with item 32)	68	25044	Drive Pulley, 60 Cycle
27	25167	Screw (used to mount Erase Head)		25234	Drive Pulley, 50 Cycle
28	25072	Erase Head	69	25056	Set Screw
29	12143	Screw (used to mount item 86)	70	25031	Turntable Drive Belt (60 Cycle)
30	25121	Spring Clip (used to mount item 34)		25231	Turntable Drive Belt (50 Cycle)
31	25119	Shoulder Washer	71	25077	Turntable Shaft & Capstan
32	25276	Tone Arm Rest	72	25079	Auxiliary Shaft Housing
33	22903	Screw (used to mount item 72)	73	13823	Lock Nut
34	25122	Switch Actuator Lever	74	21934	End Thrust Screw
35	25134	Function Shift Lever	75	21933	Lead Screw & Gear Assembly
36	12143	Screw (used to mount item 64)	76	22903	Adjusting Screw, Shaft Housing
37	25151	Safety Latch Plastic Stud Button	77	9569	Nut (used on item 78)
38	25274	Control Knob	78	7534	Screw (used to lock item 71)
39	3119	Lockwasher	79	25166	Reinforcing Plate
40	22903	Screw (used to mount item 65)	80	25102	Arm Lock Bracket Assembly
41	14663	Nut (used to mount item 38)	81	25153	Lock Nut, Arm Bracket Assembly
42	25154	Washer	82	25098	Follower Arm
43	21914	Spring Retainer Clip	83	22376	Screw (used to mount item 82)
44	25144	Safety Latch (item 37 not included)	84	25094	Bias Switch Assembly
45	30214	Spring, Safety Latch	85	25158	Terminal Strip

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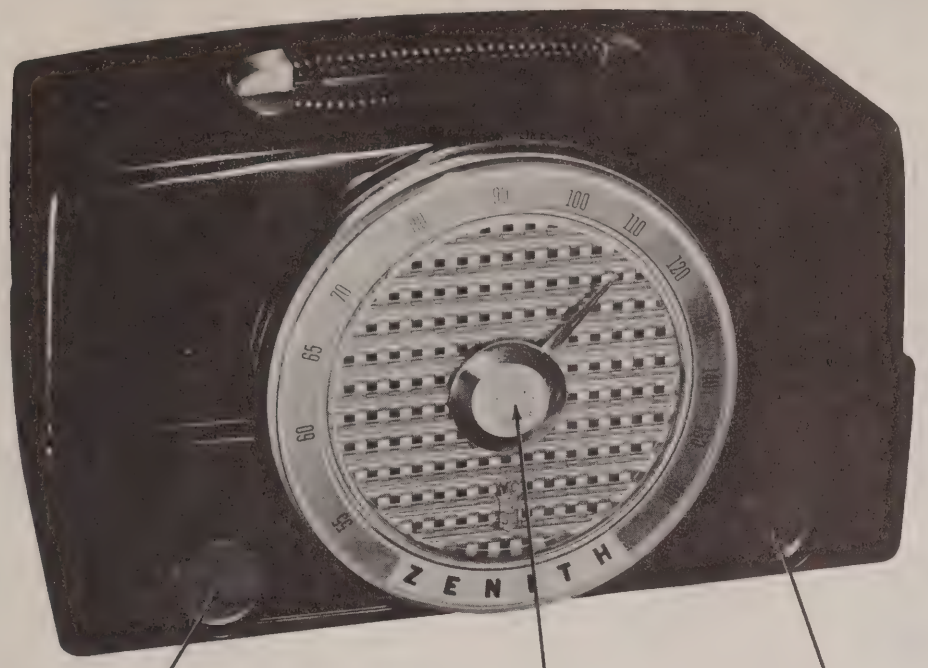
ZENITH
MODELS K526, W, Y (Ch. 5K04)



ZENITH
MODELS K526, W, Y (Ch. 5K04)

TRADE NAME	Zenith Models K526, W, Y (Ch. 5K04)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago, Ill.
TYPE SET	AC/DC Operated AM Superheterodyne Receiver with Phono Provisions
TUBES (Five)	Types 12BA6 RF Amp., 12BE6 Conv., 12BA6 IF Amp., 12AT6 Det.-AVC-AF Amp., 50C5 Audio Output
POWER SUPPLY	110-120 Volts AC/DC
RATING	.32 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
To set pointer turn tuning capacitor fully closed and set tip of pointer even with top of second bar from bottom of speaker grill work. Set at low frequency end of dial.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V2). Low side to B-.	455KC (400~Mod)	600KC	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1600KC	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	1400KC	"	A6, A7	"

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1	RF Amplifier	12BA6	12BA6	7BK	
V2	Converter	12BE6	12BE6	7CH	
V3	IF Amplifier	12BA6	12BA6	7BK	
V4	Det.-AVC-AF Amp.	12AT6	12AT6	7BT	
V5	Audio Output	50C5	50C5	7CV	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▬80	150	22-2441	AFH4-37		DO32		FP411.3	TVL-2442	
B	■40	150								
C	▲40	150		PRS50/20		BR202A		TC45	TVA-2445	
D	40	25								
C2	.05	200	22-829	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	.05	200	22-829	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C4	4000		22-4	BPD-004	D6-402	TM5D4	GP2-333-402	UC-5240	5HK-D4	
C5	10000		22-3	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C6	.05	200	22-1158	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C7A	500		♦105-27		♦PC-84		♦1404-01		♦102C1	
B										
C	.01									
C8	.05	200	22-829	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C9	.005	400	22-1702	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C10	.047	400	22-1775	489ZX-05		PJ4S5		PT4147	4TM-S47	
C11	.05	200	22-829	P288-05		PJ2S5		PT415	2TM-S5	

♦ Items C7A, C7B, C7C, R12A, R12B, are combined in one unit.
When replacing items separately C7A and C7B should total 500MMF
Some Models use separate items in these applications.
In this case, C7A is 500MMF (part #22-854), C7B is omitted, C7C is .01MFD (part #22-3).

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	63-2829	Q13-137	AG-63-Z	BSK-70-S	U-53	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A
R2A	500KΩ	½	63-2828	Q11-133	AG-58-S	AB-59	U-50	Tone
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R2A

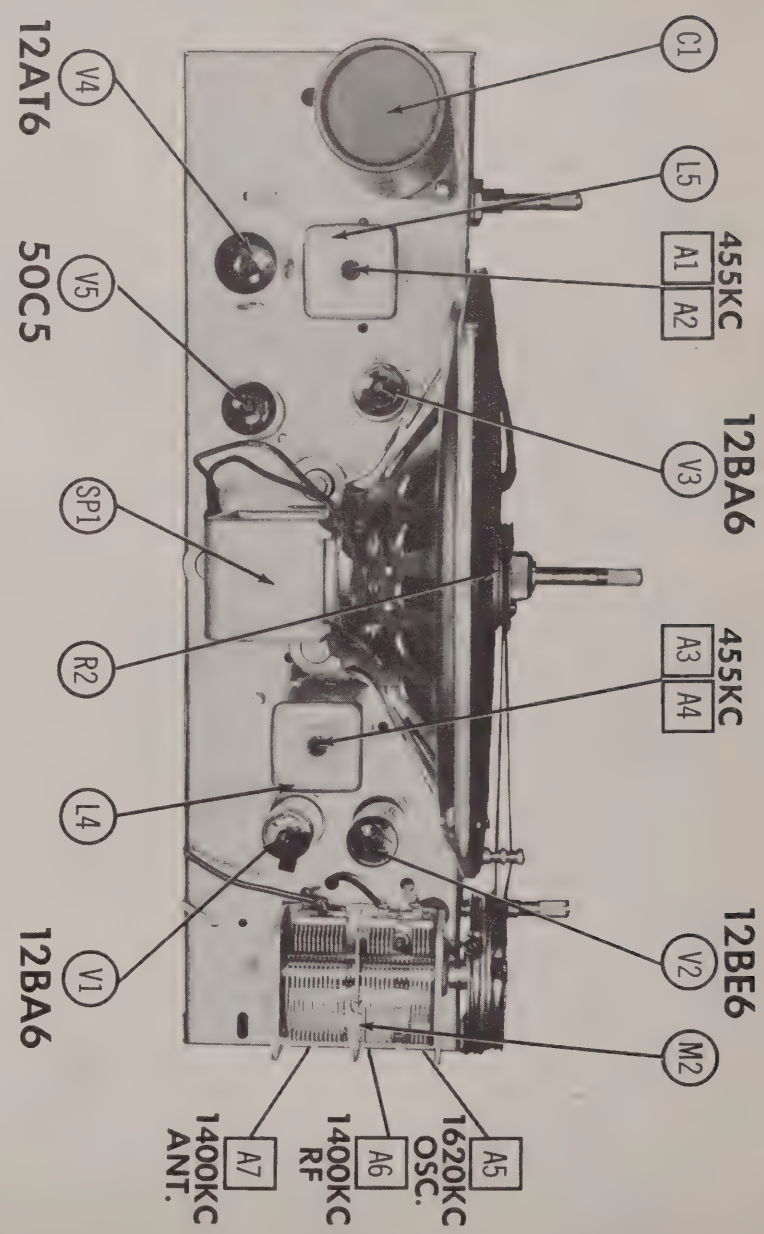
RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	NOTES
R3	330Ω	½	63-1765	BTS-330	
R4	15KΩ	½	63-1835	BTS-15K	
R5	1000Ω	½	63-1786	BTS-1000	
R6	22KΩ	½	63-1842	BTS-22K	
R7	68Ω	½	63-1737	BTS-68	
R8	2.2Meg	½	63-1926	BTS-2.2Meg	
R9	1Meg	½	63-1912	BTS-1Meg	
R10	15Meg	½	63-1961	BTS-15Meg	
R11	1000Ω	½	63-1785	BTS-1000	
R12A	500KΩ	½	♦105-27		Note
B	500KΩ	½			Note

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	NOTES
R13	100KΩ	½	63-1870	BTS-100K	
R14	120Ω	½	63-1747	BTS-120	
R15	5600Ω	½	63-1817	BTS-5600	
R16	4700Ω	½	63-1813	BTS-4700	
R17	330Ω	2	63-1371	BW-2-330	
R18	270Ω	2	63-1452	BW-2-270	
R19	22Ω	1	62-1450		
R20	82Ω	2	63-2428	BW-2-82	
R21	82Ω	2	63-2428	BW-2-82	

Note. Some Models may use separate items in this application, in this case R12A and R12B become 470KΩ.
♦ Items R12A, R12B, C7A, C7B, C7C are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		ZENITH PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2.7KΩ	3.3Ω	230Ω tap @ 2.6Ω	.62Ω SEC. 2 14.4Ω	95-1327					

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	ZENITH PART No.	VIKING PART No.	QUAM PART No.	
SP1	7½"	PM	3.3Ω	49-729	8J9	8A21	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	ZENITH PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	3.6Ω		S-19493				Includes Cabinet back
L2	RF Coil	3Ω	1Ω	S-14832	14-1076 *			Sec. tapped @ 6Ω
L3	Osc. Coil	.5Ω	9.5Ω	S-14833				
L4	Input IF	23Ω	22Ω	95-1101	16-6666	BC-352 †	012-C1	
L5	Output IF	22Ω	22Ω	95-1102		BC-355 †	12-C6 †	

* Drill mounting hole.
† Use adaptor plate.

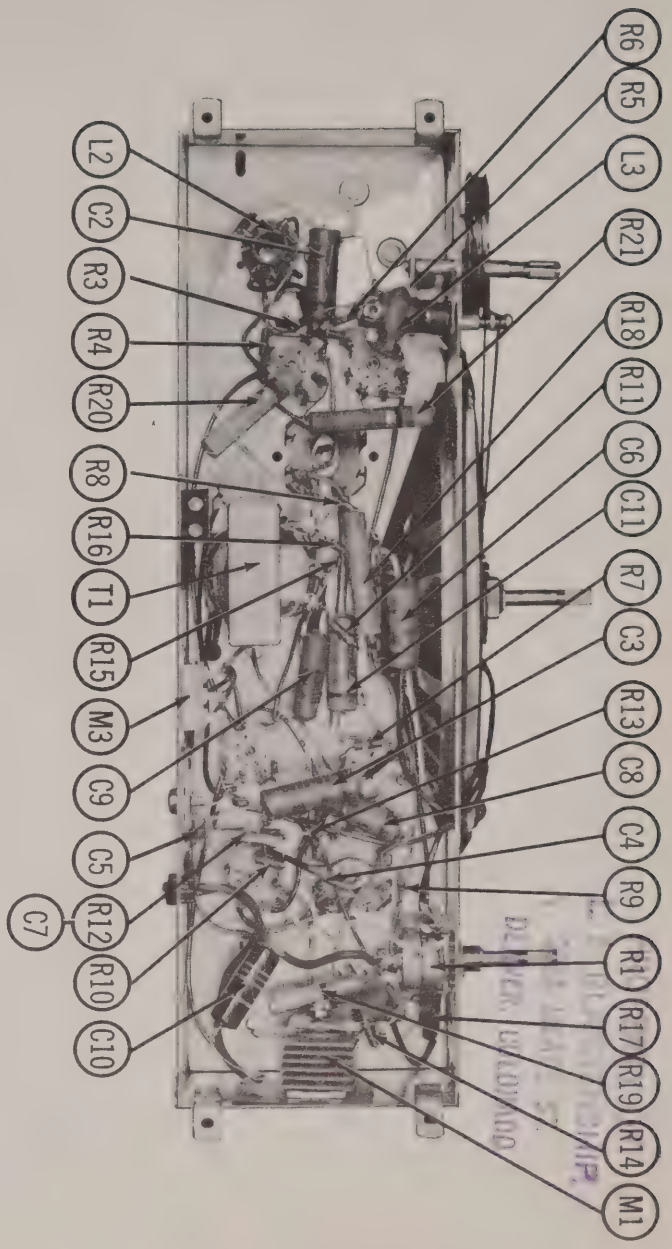
SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT	ZENITH PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.
M1	.086ADC	212-13	NC5	5M1	1101A	6S100	100

MISCELLANEOUS

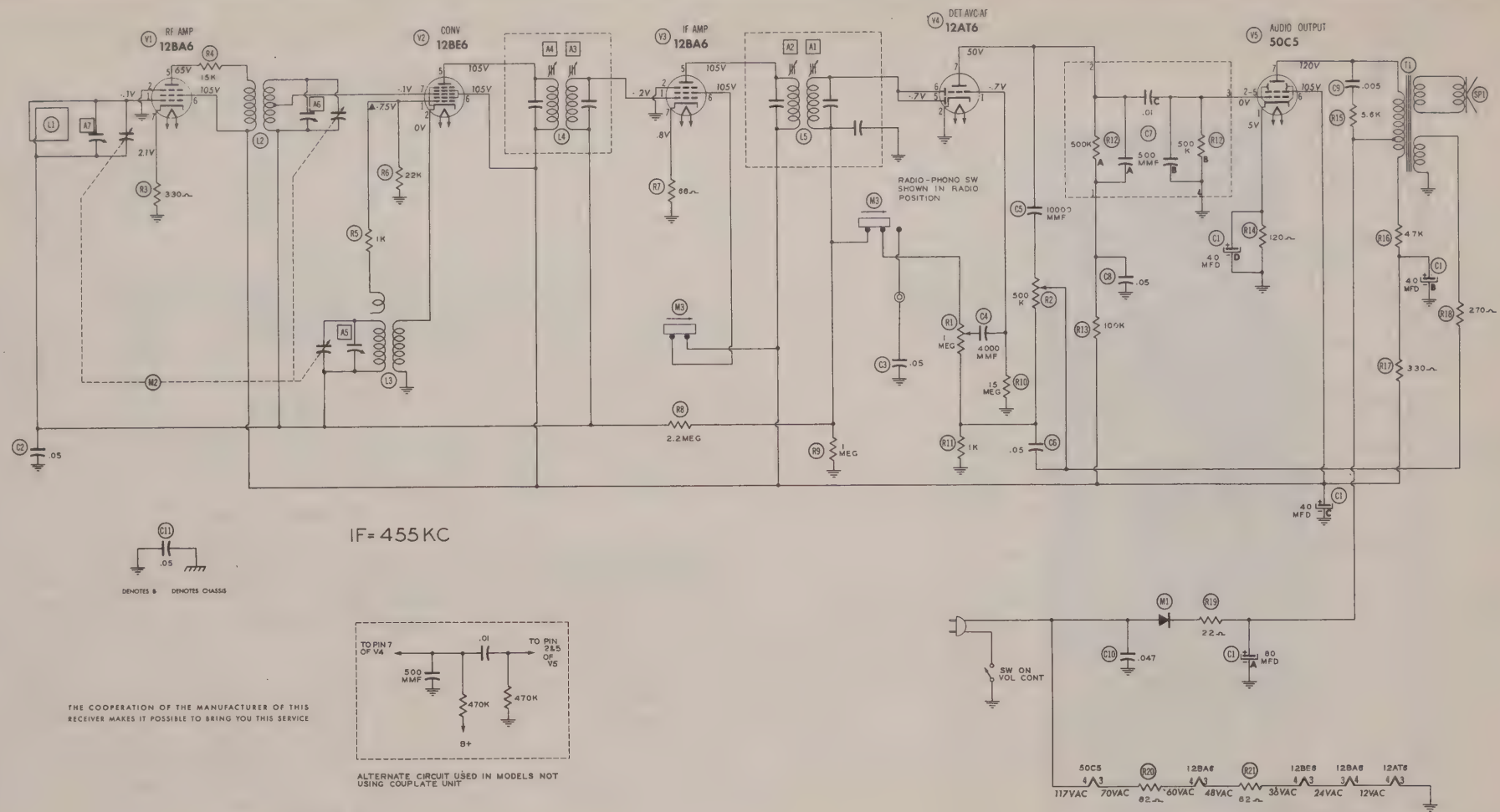
ITEM No.	PART NAME	ZENITH PART No.	NOTES
M2	Tuning Capacitor	22-2440	30-367MMF, 14-205MMF, 15-86MMF
M3	Switch	85-495	
	Cabinet	14-1517	Model 526W
	Cabinet	14-1518	Model 526
	Cabinet	14-1519	Model 526Y
	Dial Pointer	59-286	
	Dial Scale	26-488	
	Escutcheon	57-1879	
	Knob	46-974	Tuning & Volume for Model K562Y (2 used)
	Knob	46-1069	Tuning & Volume for Model K526W (2used)
	Knob	46-1070	Tuning & Volume for Model K526 (2used)
	Knob	46-1073	Tone

CHASSIS—BOTTOM VIEW



ZENITH
MODEL K526 (Ch. 5K04)

ZENITH
MODEL K526 (Ch. 5K04)



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BA6	3.2Meg	0Ω	130Ω	132Ω	†15.5KΩ	†5KΩ	330Ω
V 2	12BE6	22KΩ	.5Ω	34Ω	36Ω	†5KΩ	†5KΩ	3.2Meg
V 3	12BA6	3.2Meg	0Ω	34Ω	12Ω	†5KΩ	†5KΩ	68Ω
V 4	12AT6	1Meg	0Ω	0Ω	1Ω	1Meg	†1Meg	†600KΩ
V 5	50C5	120Ω	500KΩ	214Ω	260Ω	500KΩ	†8KΩ	†300Ω

▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM OUTPUT OF M1

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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215-18

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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MODEL K2872R

ZENITH
MODELS K2872R, K2873E (Ch. 28K20)

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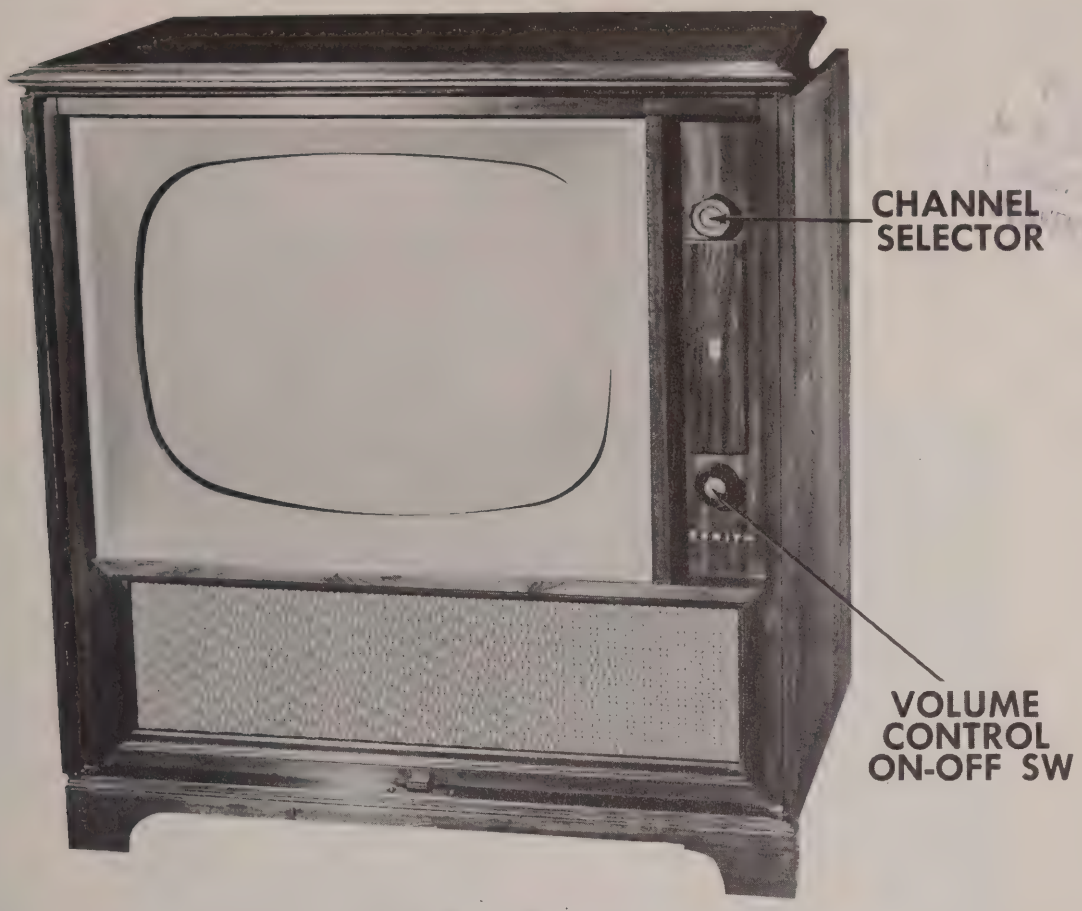
ZENITH
MODELS K2872R, K2873E (Ch. 28K20)



ZENITH MODEL K2872R

TRADE NAME	Zenith Models K2872R, K2873E (Ch. 28K20)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Illinois
TYPE SET	Television Receiver
TUBES	Twenty Eight

POWER SUPPLY 110-120 Volts AC-60 Cycle RATING 4 Amp @ 117 Volts AC

TUNING RANGE—Channels 2 thru 13, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

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ZENITH
MODELS K2872R, K2873E (Ch. 28K20)

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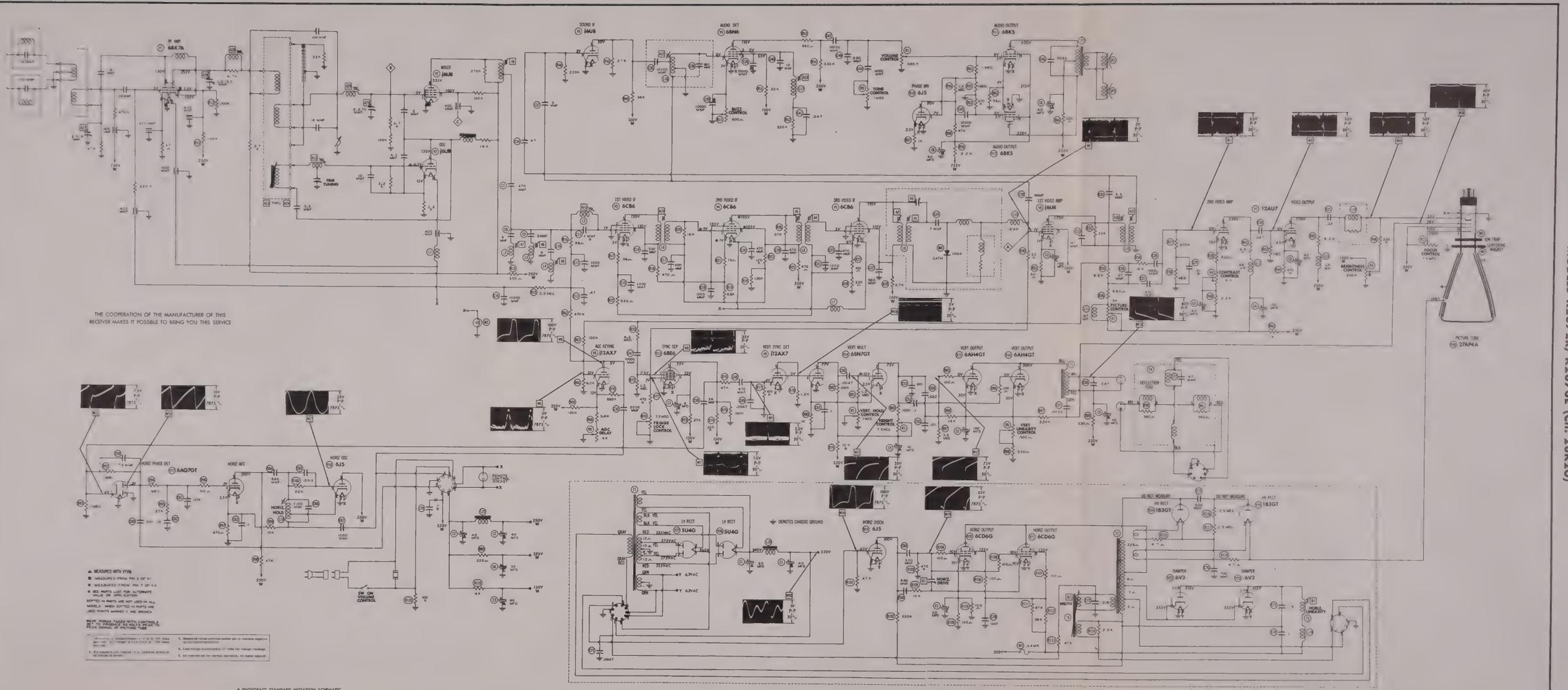
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MODELS K2872R, K2873E (Ch. 28K20)
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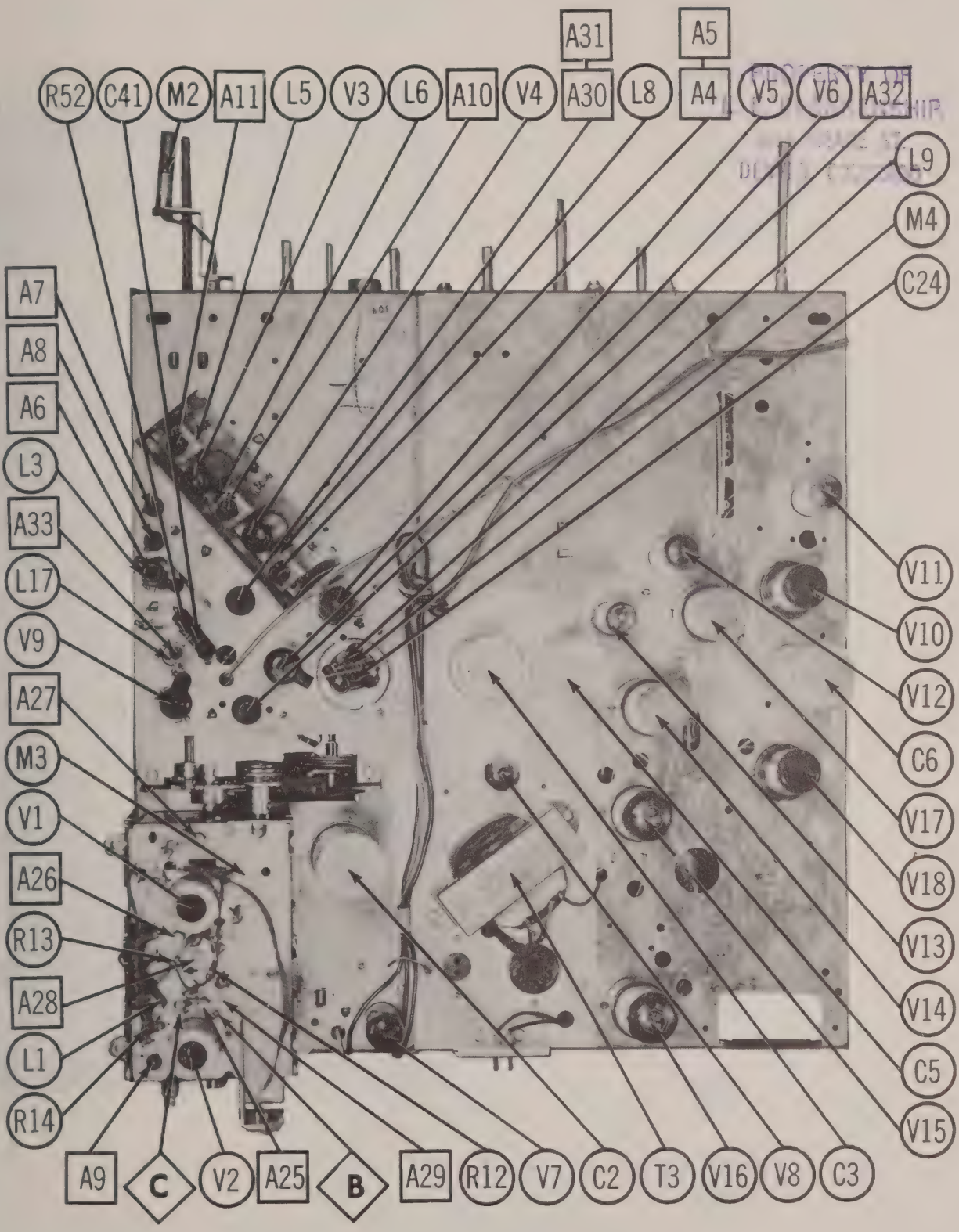
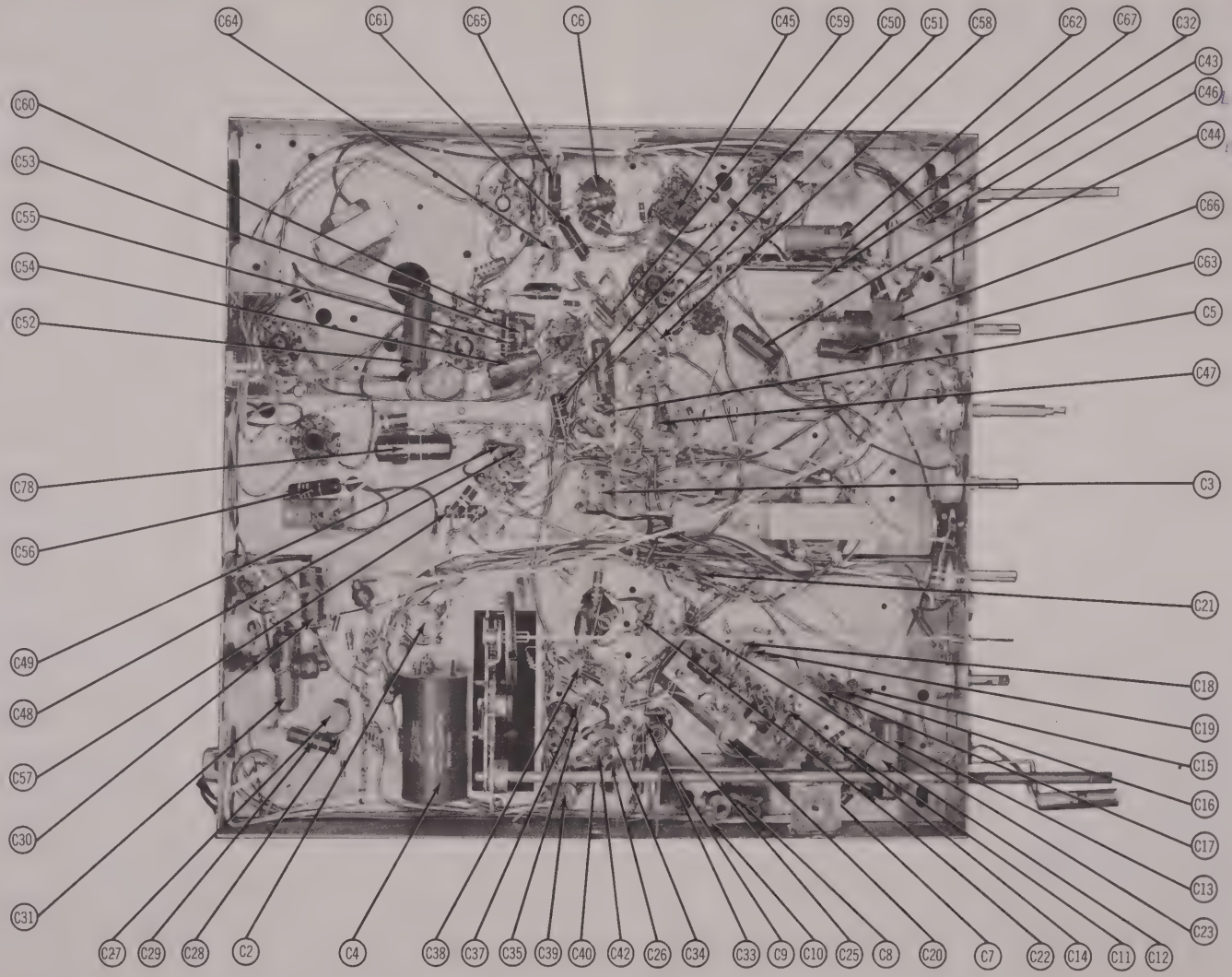
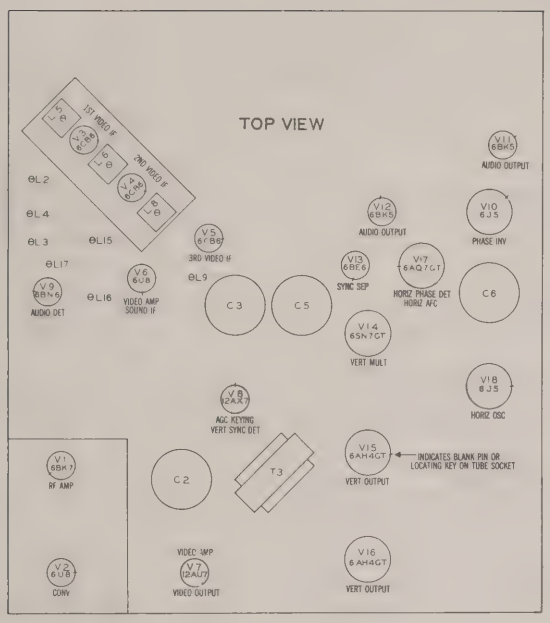


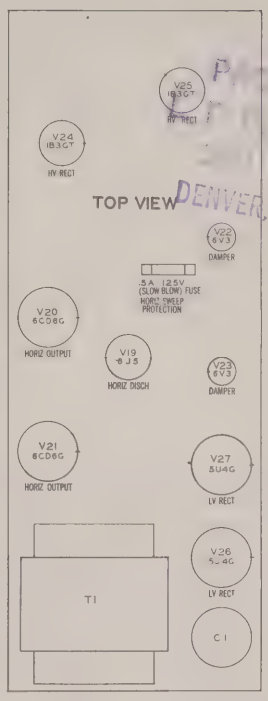
RF-IF CHASSIS-TOP VIEW



RF-IF CHASSIS-BOTTOM VIEW-CAPACITOR IDENTIFICATION

TUBE PLACEMENT CHART





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TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V26, V27

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5, V6
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V6, V7, V28
Has pic, no sound - V6, V9, V10, V11, V12
Overloaded picture - V8

SYNC FAILURE
No vert. sync - V8, V13, V14
No horiz. sync - V13, V17, V18
No vert. or horiz. sync - V13

SWEEP FAILURE
No raster, has sound - V18, V19, V20, V21, V22, V23, V24, V25, V28 Fuse (M1)
No vertical deflection - V14, V15, V16
Poor vert. linearity or foldover - V14, V15, V16
Poor horiz. linearity or foldover - V18, V19, V20, V21, V22, V23
Narrow picture - V18, V19, V20, V21, V22, V23, V24, V25, V26, V27
Vert. off freq. - V8, V13, V14
Horiz. off freq. - V13, V17, V18

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Connect the negative lead of a 2 volt bias source to the ungrounded side of C9. Connect the positive lead to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	470MMF	High side to pin 1 (grid) of 6CB6 (V5). Low side to chassis.	44MC (10MC Swp)	44MC	Any non-interfering channel	Vert. Amp. thru 10KΩ to point (A). Low side to chassis.	A1, A2, A3	Adjust for curve of maximum amplitude and symmetry similar to Fig. 1. A3 is an adjustable coupling "gimmick" which may be rotated with the fingers. Attenuate generator for two volts peak to peak response on scope.
2.	"	High side to pin 1 (grid) of 6CB6 (V4). Low side to chassis.	"	"	"	"	A4, A5	Preset the bottom slug half way out of coil and the top slug all the way out of coil. Adjust for response similar to Fig. 2.
3.	"	High side to point (B) (on top of tuner). Low side to chassis.	"	39.75MC 41.25MC 47.25MC	"	"	A6, A7, A8	Remove the bias battery and set scope gain to amplify the trap region of the response curve. Adjust for MINIMUM marker amplitude.
4.	"	"	"	42.75MC 45.0MC 45.75MC	"	"	A9, A10, A11	Replace the bias battery. Adjust for response curve similar to Fig. 3. If necessary retouch A1 thru A5 for desired response.

OSCILLATOR ALIGNMENT

The master oscillator adjustment of A12 is to be made only if adjustment of the individual channel oscillator screws fails to bring the channels well within the range of the fine tuning control.
If channels 2 thru 6 fall within the range of the fine tuning control, but the higher channels do not, slight adjustment of A12 may bring the high channels in.
Connect the negative lead of a 1 volt bias source to the ungrounded side of C9. Connect the positive lead to chassis.
Turn the oscilloscope gain up so that the trap notch becomes visible.
Connect the syncrhonized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	57MC (10MC Swp)	59.75MC	2	Vert. Amp. to point (A). Low side to chassis.	A13	Adjust to place sound marker in notch as in Fig. 4.
			63MC (10MC Swp)	65.75MC	3		A14	
			69MC (10MC Swp)	71.75MC	4		A15	
			79MC (10MC Swp)	81.75MC	5		A16	
			85MC (10MC Swp)	87.75MC	6		A17	
			177MC (10MC Swp)	179.75MC	7		A18	
			183MC (10MC Swp)	185.75MC	8		A19	
			189MC (10MC Swp)	191.75MC	9		A20	
			195MC (10MC Swp)	197.75MC	10		A21	
			201MC (10MC Swp)	203.75MC	11		A22	
			207MC (10MC Swp)	209.75MC	12		A23	
			213MC (10MC Swp)	215.75MC	13		A24	

FIG. 1

FIG. 2

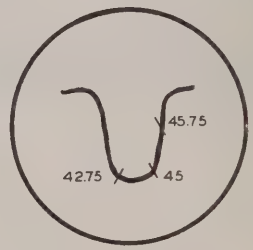


FIG. 3

ALIGNMENT INSTRUCTIONS (CONT.)

RF AND MIXER ALIGNMENT

Leave bias source connected as under Oscillator Alignment.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	63MC (10MC Swp)	61.25MC 65.75MC	3	Vert. Amp. thru 10KΩ to point (C). Low side to chassis.	A25, A26, A27	Adjust for response curve similar to Fig. 5.
7.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"	A28, A29	Adjust for symmetrical response curve similar to Fig. 6.

SOUND IF ALIGNMENT

Connect an attenuator (Zenith part # S-17203 or equivalent) in series with the receiver antenna.
Tune in a tone modulated TV signal and adjust the attenuator until the signal falls below the limiting level of the 6BN6 limiter-detector as evidenced by a hiss similar to superregeneration.
Adjust the sound take-off transformer, A30 and A31, the sound IF coil, A32 and the quadrature coil, A33 for maximum sound of best quality.
Adjust the buzz control (R11) for minimum intercarrier buzz.
If the intercarrier buzz cannot be eliminated with the buzz control, check the setting of the AGC delay adjustment.
If during the sound IF alignment the signal rises above the limiting level (hiss disappears) increase the attenuation until the hiss returns.

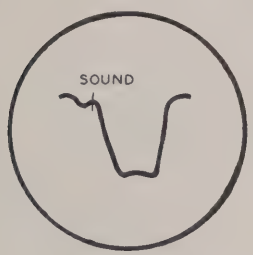


FIG. 4

FIG. 5

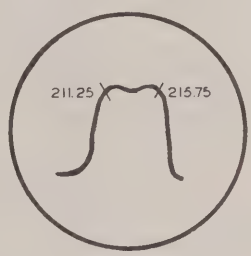
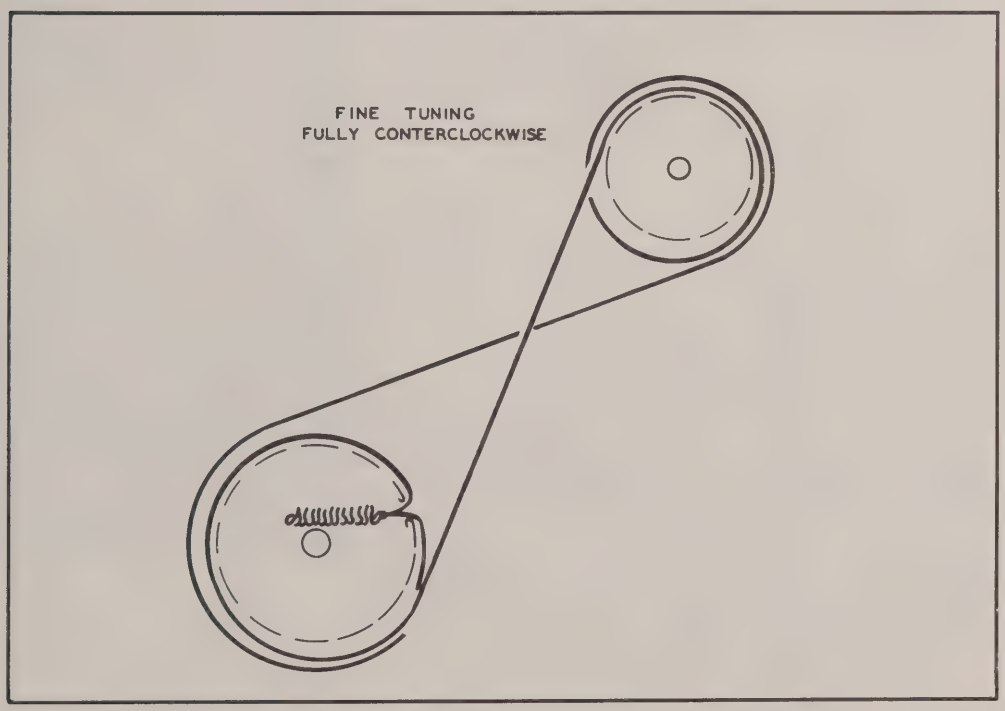


FIG. 6

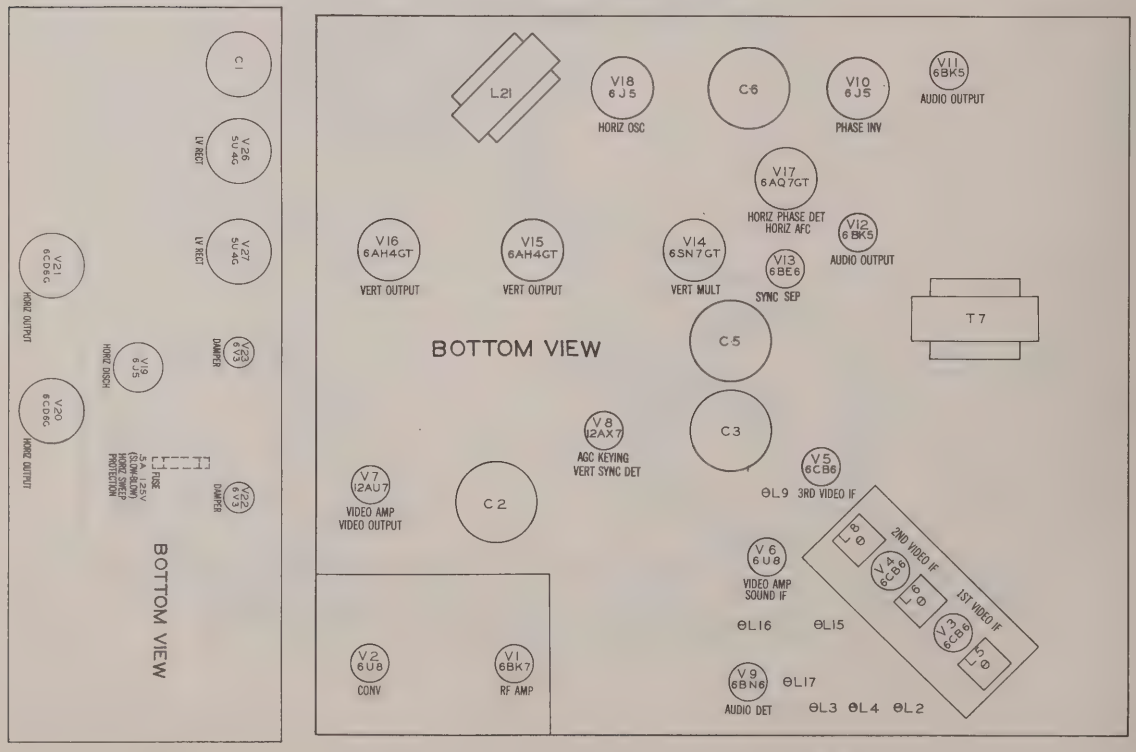


FINE TUNING DRIVE CORD STRINGING

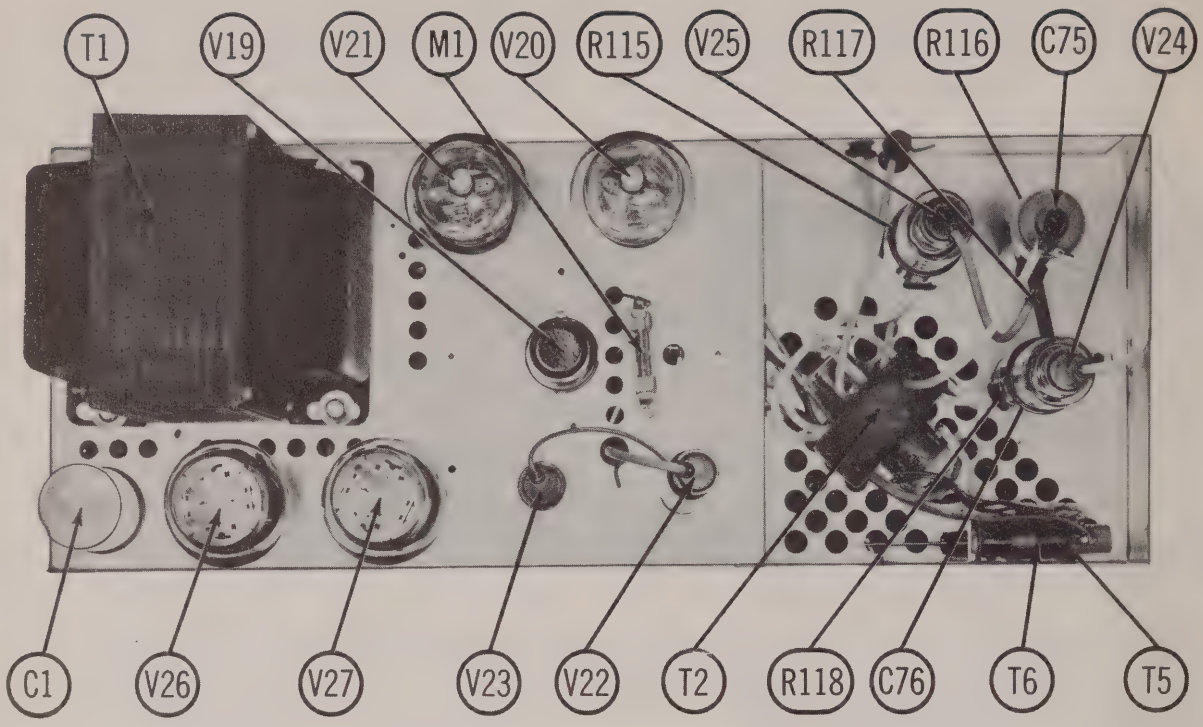
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BK7A	‡3.3KΩ	‡55KΩ	INF	0Ω	.1Ω	INF	3.5Meg	47Ω	0Ω
V 2	6U8	‡18KΩ	105KΩ	‡150KΩ	.1Ω	0Ω	‡520Ω	0Ω	2.2KΩ	4.4KΩ
V 3	6CB6	1.1Meg	605Ω	.1Ω	0Ω	♦345Ω	♦345Ω	0Ω		
V 4	6CB6	♦6.8KΩ	♦15Ω	.1Ω	0Ω	‡660Ω	‡660Ω	100KΩ		
V 5	6CB6	220Ω	320Ω	.1Ω	0Ω	‡6.7KΩ	‡6.7KΩ	0Ω		
V 6	6U8	‡27KΩ	3.9KΩ	‡4KΩ	0Ω	.1Ω	‡8.1KΩ	82Ω	0Ω	220KΩ
V 7	12AU7	‡5KΩ	1.5Meg	3.6KΩ	0Ω	0Ω	†8.4KΩ	1Meg	470Ω	.1Ω
V 8	12AX7	640KΩ	8.2KΩ	5.2KΩ	0Ω	0Ω	1.2KΩ	1.2KΩ	100KΩ	.1Ω
V 9	6BN6	370Ω	5.1Ω	.1Ω	0Ω	‡26KΩ	220KΩ	‡330KΩ		
V 10	6J5	0Ω	0Ω	‡50KΩ	20Ω	410KΩ	470KΩ	.1Ω	1KΩ	
V 11	6BK5	‡725Ω	INF	20Ω	.1Ω	0Ω	56Ω	20Ω	‡2.4KΩ	INF
V 12	6BK5	‡725Ω	INF	470KΩ	0Ω	.1Ω	56Ω	470KΩ	‡2.4KΩ	INF
V 13	6BE6	22KΩ	0Ω	.1Ω	0Ω	‡82KΩ	‡31KΩ	1.5Meg		
V 14	6SN7GT	1.6Meg	†3.5Meg	1KΩ	1.2KΩ	†110KΩ	1KΩ	0Ω	.1Ω	
V 15	6AH4GT	3.3Meg	0Ω	†3.4Meg	19KΩ	†585Ω	†3.5Meg	.1Ω	790Ω	
V 16	6AH4GT	3.3Meg	0Ω	3.3Meg	INF	†585Ω	INF	.1Ω	790Ω	
V 17	6AQ7GT	2Meg	1Meg	0Ω	3Meg	‡47KΩ	470Ω	0Ω	.1Ω	
V 18	6J5	0Ω	0Ω	‡188Ω	INF	32KΩ	INF	.1Ω	10.5KΩ	
V 19	6J5	0Ω	.1Ω	▲220KΩ	INF	47KΩ	27KΩ	0Ω	0Ω	
V 20	6CD6GT	INF	0Ω	50Ω	470KΩ	470KΩ	†21KΩ	.1Ω	†21KΩ	TOP CAP ▲6Ω
V 21	6CD6GT	15KΩ	.1Ω	50Ω	470KΩ	470KΩ	†21KΩ	0Ω	†12KΩ	TOP CAP ▲6Ω
V 22	6V3	INF	†95Ω	INF	.1Ω	0Ω	INF	†95Ω	INF / Pin 9 †95Ω	TOP CAP 1Meg
V 23	6V3	INF	†95Ω	INF	.1Ω	0Ω	INF	†95Ω	INF / Pin 9 †95Ω	TOP CAP 1Meg
V 24	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								TOP CAP ▲232Ω
V 25	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								TOP CAP ▲ INF
V 26	5U4GT	INF	600KΩ	INF	12Ω	INF	13.2Ω	INF	600KΩ	
V 27	5U4GT	INF	23KΩ	INF	8Ω	INF	10Ω	INF	23KΩ	
V 28	27AP4	0Ω	220KΩ	PIN 6 †770KΩ	PIN 10 †95Ω	PIN 11 250KΩ	PIN 12 .1Ω			

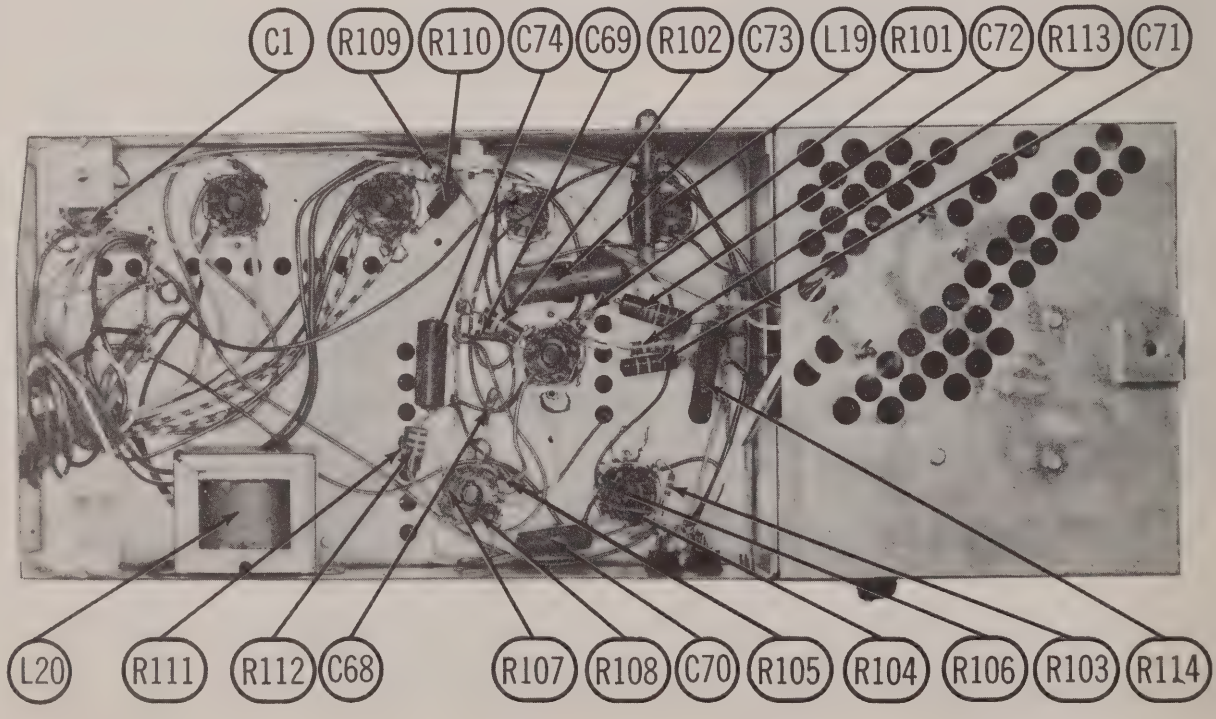
† MEASURED FROM PIN 2 OF V26.
‡ MEASURED FROM PIN 2 OF V27.
♦ MEASURED FROM PIN 7 OF V4.
▲ MEASURED FROM TOP CAP OF V22.



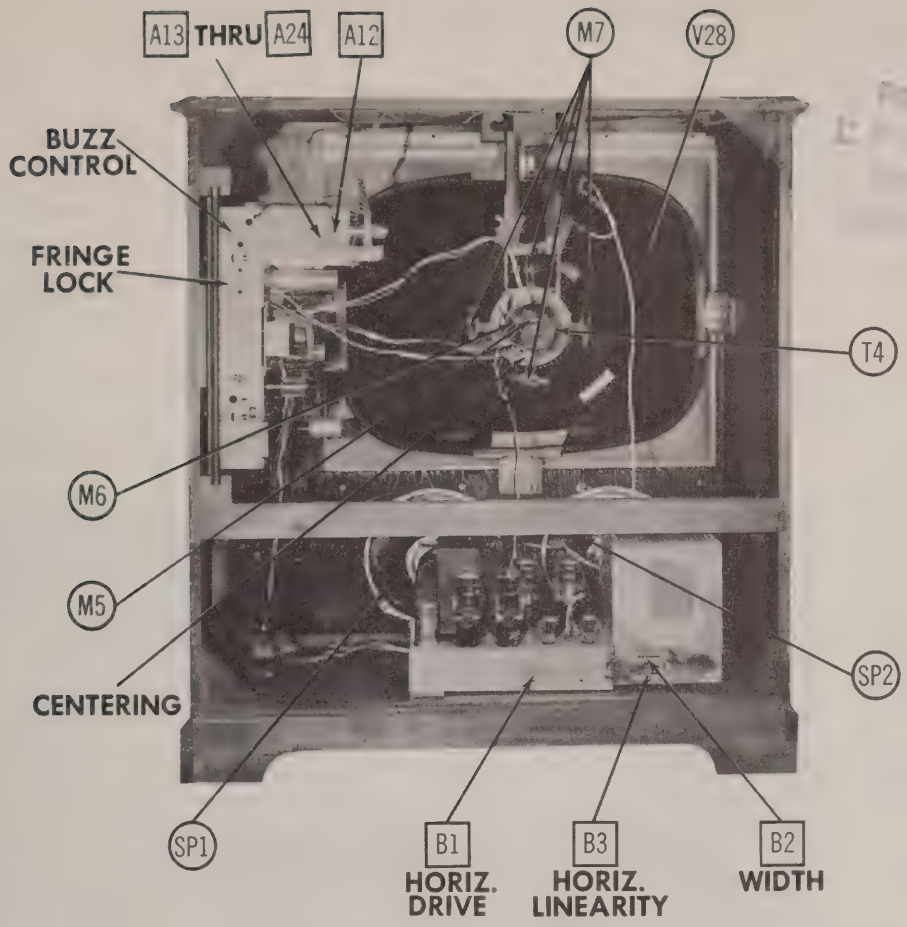
TUBE PLACEMENT CHART



POWER CHASSIS-TOP VIEW



POWER CHASSIS-BOTTOM VIEW



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Adjust the horizontal hold until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer (B1) for greatest picture width.

Adjust the width slug (B2) for a picture slightly wider than necessary to fill the mask horizontally.

Adjust the horizontal linearity slug (B3) for a picture that is symmetrical from left to right.

AGC DELAY CONTROL ADJUSTMENT

Connect the vertical amplifier of an oscilloscope thru 10KΩ to point (A). Select the strongest TV signal available and adjust the delay control for 2 volts peak response on scope.

DISASSEMBLY INSTRUCTIONS

1. Remove 9 push on type control knobs from front panel.
2. Remove 14 wood and 1 metal screws. Remove rear cover.
3. Disconnect built-in antenna.

MAIN CHASSIS

1. Disconnect 2 speaker leads, vert. yoke plug, CRT socket, and power supply plug.
2. Remove 2 wood screws. Remove mounting board.
3. Remove 4 chassis bolts. Remove mounting board.

POWER SUPPLY CHASSIS

1. Disconnect horiz. yoke plug and HV lead.
2. Remove 3 chassis bolts. Remove chassis.
3. Remove8 speaker nuts. Remove 2 speakers.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under "Loss of High voltage".

INSUFFICIENT SWEEP

Check by substitution V18, V19, V20, V21, V22, V23, V26 and V27. Check amplitude of waveform W19.

If Insufficient	If Sufficient
Check waveform W18.	Check all components of horizontal output circuit and damper circuit, especially the screen bypass capacitor, C70.

Check waveform W18.

If Unsatisfactory	If Satisfactory
Check all components of horizontal oscillator. Check solder joints of plug and receptacle between power supply chassis and the main chassis.	Check all components of horizontal discharge circuit. Substitute R102 as it may increase in resistance when hot.

DRIVE LINES

Substitute V20 and V21. Check drive control. Check associated components.

COMPRESSED AT LEFT SIDE

Check adjustment of B3. Substitute V22 and V23. Check C73, T5 and L19.

FOLDS

Check by substitution V20, V21, V22 and V23. Check associated components, particularly, the horizontal output transformer and the yoke.

VERTICAL

LOSS OF SWEEP

Check by substitution V14, V15 and V16. Check waveform W12.

If Unsatisfactory	If Satisfactory
Check all components of V14, especially C52, C53 and C54.	Check components of V15 and V16 especially the vertical output transformer T7 and the yoke T4B.

INSUFFICIENT SWEEP

Follow procedure outlined under "Loss of Sweep".

COMPRESSED AT BOTTOM

Substitute V15 and V16. Check C5C for open and C5B for leakage.

COMPRESSED AT TOP

Substitute V15 and V16. Check C52 and other components of vertical output stages.

COMPRESSED AND FOLDED AT TOP AND STRETCHED AT BOTTOM (Fig.1)

Check C54 for open.

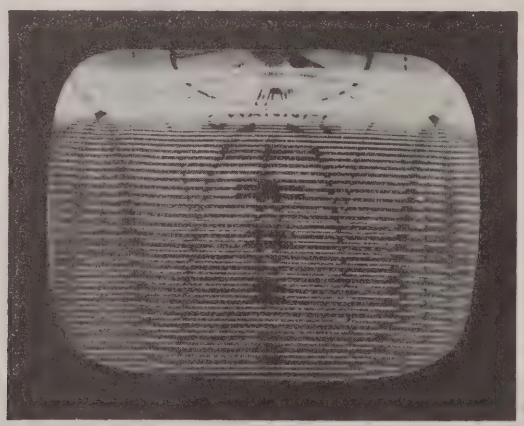


Fig. 1 COMPRESSED AND FOLDED AT TOP STRETCHED AT BOTTOM
SEE VERTICAL SWEEP

SYNC

HORIZONTAL

LOSS OF SYNC

Check by substitution V17, V18 and V19. Check waveform W18.

If Unsatisfactory	If Satisfactory
Check waveform W17.	Check all components of V19.

Check waveform W17.

If Unsatisfactory	If Satisfactory
Check waveform W15.	Check components of the horizontal oscillator including coupling capacitor ,C67.

Check waveform W15.

If Unsatisfactory	If Satisfactory
Check C58, C59, R92 and R93.	Check all components of V17. Check C64, C65, C66, R100 and L18.

CRITICAL SYNC

Follow procedure outlined under "Loss of Sync".

VERTICAL

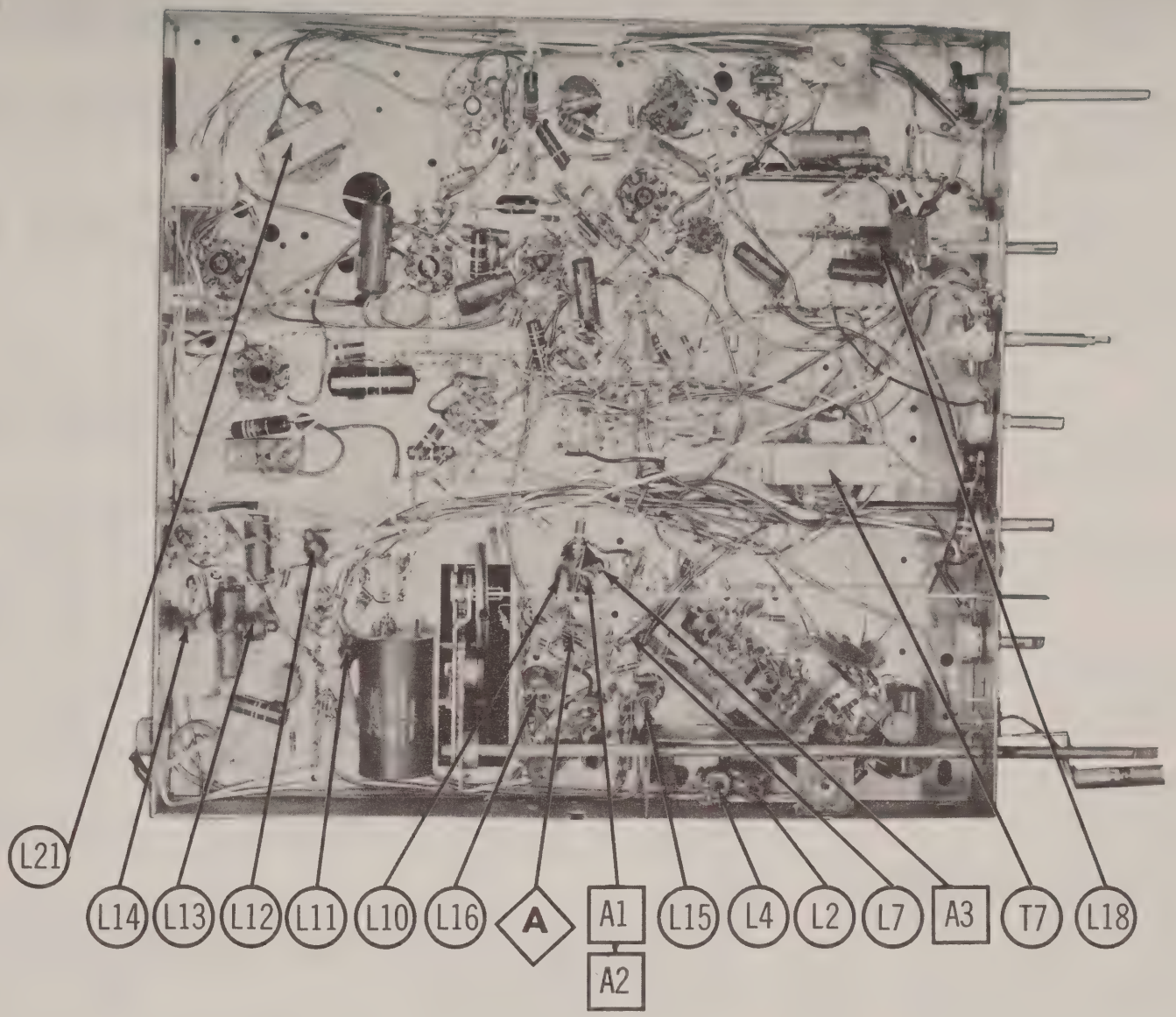
LOSS OF SYNC

Check by substitution V8, V13 and V14. Check waveform W10.

If Unsatisfactory	If Satisfactory
Check all components of V8B and V13 including the integrating network.	Check all components of V14. Check coupling and waveshaping network between V14 and the vertical output stages.

CRITICAL SYNC

Follow procedure outlined under "Loss of Sync".



RF-IF CHASSIS-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1	RF Amplifier	6BK7A	6BK7A	9AJ	
V2	Converter	6U8	6U8	9AE	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Amplifier-Sound IF Amp.	6U8	6U8	9AE	
V7	Video Amplifier-Video Output	12AU7	12AU7	9A	
V8	AGC Keying-Vert. Sync Det.	12AX7	12AX7	9A	
V9	Audio Detector	6SN6	6SN6	7DF	
V10	Phase Inverter	6J6	6J6	9Q	
V11	Audio Output	6BK5	6BK5	9BQ	
V12	Audio Output	6BK5	6BK5	9BQ	
V13	Sync Clipper	6BK6	6BK6	7CH	
V14	Vert. Mult.	6SN7GT	6SN7GT	8BD	
V15	Vert. Output	6AH4GT	6AH4GT	7BK	
V16	Vert. Output	6AH4GT	6AH4GT	7BK	
V17	Horiz. Phase Det.-Horiz. AFC	6AQ7GT	6AQ7GT	8CK	
V18	Horiz. Oscillator	6J5	6J5	6Q	
V19	Horiz. Discharge	6J5	6J5	6Q	
V20	Horiz. Output	6CD6GT	6CD6GT	5BT	
V21	Horiz. Output	6CD6GT	6CD6GT	5BT	
V22	Damper	6V3	6V3	9BD	
V23	Damper	6V3	6V3	9BD	
V24	HV Rectifier	1B3GT	1B3GT	3C	
V25	HV Rectifier	1B3GT	1B3GT	3C	
V26	LV Rectifier	5U4G	5U4G	5T	
V27	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No	REPLACEMENT DATA: ZENITH PART No	REPLACEMENT DATA: SYLVANIA PART No		RTMA BASE TYPE	NOTES
V28	27AP4			12C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲20	450	22-3438	AFH3-123		C106		FP430.2	TVL-4732	
B	▲40	450								
C	▲30	25								
C2A	▲40	400	22-3358	AFH3-46		B048	FP378		TVL-4670	
B	▲80	400		PR325/50		HR502A	TC29			
C	60	25								
D	▲30	400								Note 1
C3A	▲60	350	22-2418	AFH4-83					TVL-4601	
B	▲4	350		PR325/50						
C	▲100	25								
D	60	25								
C4	100	400	22-2447	AFH2-61		C036	FP240		TVL-2770	
C5A	▲10	475	22-2319	AFH4-133		C104	FP385		R1372	
B	▲45	450								
C	▲100	50								
C6A	▲40	400	22-2437	AFH3-46		C037	FP378		TVL-3792	
B	▲80	400							TVA-1709	
C	▲30	400								
C7	470		22-2217	BPD-00047	D6-471		GP2K-471	UC-5547	5GA-T47	
C8	6		22-2061							
C9	5		22-2060	SISNP0	TCZ-4.7		NP0K-050	ZT-555	5TCCB-V47	
C10	6		22-2051							
C11	1		SISNP0	TCZ-1			NP0K-010		5TCCB-V1	Note 2
C12	1000		22-7	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C13	.47	200	22-2146	P288-47		PJ2P5		PT405	2TM-P47	
C14	330		22-2309	SI330	D6-331		GP2K-331	UC-5333	5GA-T33	
C15	1000		22-7	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C16	10000		22-3	BPD-01	DD-103	TM5D1	811-01	DC-511	5HK-S1	
C17	2000		22-7	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C18	470		22-2302	SI470	D6-471		GP2K-471	UC-5347	5GA-T47	
C19	1000		22-7	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C20	470		22-6	BPD-00047	D6-471		GP2K-471	UC-5347	5GA-T47	
C21	1000		22-7	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C22	560		22-2310	SI560	D6-561		GP2K-561	UC-5356	5GA-T56	
C23	470		22-6	BPD-00047	D6-471		GP2K-471	UC-5347	5GA-T47	
C24	7		22-1874							
C25	47		22-2466							
C26	27		22-2459							
C27	470		22-2217	BPD-00047	D6-471		GP2K-471	UC-5347	5GA-T47	
C28	10000		22-3	BPD-01	DD-103	TM5B1	811-01	DC-511	5HK-S1	
C29	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	Note 3
C30	.047	600	22-1844	P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C31	.22	400	22-1825	P488-22		PTK4P22		PT4025	4TM-P22	
C32	2000		22-8	BPD-002	DD-202	TM5D2	811-002	DC-522	5HK-D2	
C33	3.3		SI3.3NP0	TCZ-3.3			NP0K-3R3	ZT-5533	5TCCB-V22	
C34	47		22-2460	BPD-000047	D6-470		GP1K-470	UC-5447	5GA-Q47	
C35	10000		22-3	BPD-01	DD-103	TM5B1	811-01	DC-511	5HK-S1	Note 2
C36	180		22-2456							
C37	5		22-2050	SI5NP0	TCZ-4.7		NP0K-050	ZT-555	5TCCB-V47	
C38	1		22-1762	SI1NP0	TCZ-1		NP0K-010		5TCCB-V1	
C39A	10000		22-2276	BPD-2X01	DD3-102	TM5B1	822-01	DCD-511	5HK-SB1	
B	10000					TM5B1				
C40	10		22-1895	SI10NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C41	.047	200	22-1778	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C42	10000		22-3	BPD-01	DD-103	TM5B1	811-01	DC-511	5HK-S1	
C43	680		22-2320	SI680	D6-681		GP2K-681	UC-5368	5GA-T68	
C44	5000		22-4	BPD-004	D6-402	TM5D4	GP2-333-402	UC-524	5HK-D4	
C45	10000		22-3	BPD-01	DD-103	TM5B1	811-01	DC-511	5HK-S1	
C46	.0033	1000	22-1774	P1068-0033		PTK16D33		PT16233	M8-D33	

PARTS LIST AND DESCRIPTIONS

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C47	10000		22-3	BPD-01	DD-103	TM5B1		811-01	DC-511	5HK-S1
C48	470		22-2302	SI470	D6-471			GP2K-471	UC-5347	5GA-T47
C49	.0047	200	22-1842	P688-0047	D6-472	PTE6D47		GP2-333-472	PT6247	6TM-D47
C50	.0047	600	22-1869	P268-0047	D6-472	PTE6D47		GP2-333-472	PT6247	6TM-D47
C51	.1	200	22-1777	P288-1	DF-104	PTF2P1			PT401	2TM-P1
C52	.1	600	22-1841	P688-1	DF-104	PTE6P1			PT601	6TM-P1
C53	.001	600	22-2127	P688-001	D6-102	CORNELL DUBILIER PART No.	GP2L-102		PT621	6TM-D1
C54	.022	600	22-2129	P688-022		PTE6S22			PT6122	6TM-S22
C55	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103		PT411	4TM-S1
C56	.047	200	22-1778	P488-047	DF-503	PTF4S47			PT4147	4TM-S47
C57	.0033	500	22-2448	P588-0033	D6-332	PTE5D3	GP2-333-332		PT523	6TM-D3
C58	56	500	22-1831						MCB230	
C59	75	500	22-1258	1469-000075						
C60	.001	600	22-2127	P688-001	D6-102	PTE6D1	GP2L-102		PT621	6TM-D1
C61	.001	600	22-2127	P688-001	D6-102	PTE6D1	GP2L-102		PT621	6TM-D1
C62	.15	200	22-2366	P288-15		PTE4P15			TP417	2TM-P15
C63	.1	200	22-1777	P288-1	DF-104	PTF2P1			PT401	2TM-P1
C64	680	500	22-2125	1479-0007		2R5T7			MS-37	
C65	.0015	400	22-1785	P688-0015	D6-152	PTE6D15	GP2L-152		PT6215	6TM-D15
C66	1100	500	22-2418							
C67	1000		22-2112	SI1000	D6-102	TM5D1	801-001	DC-521	5HK-D1	
C68	680		22-2367							
C69	330		22-2309	SI330	D6-331		GP2K-331	UC-5333	5GA-T33	
C70	.047	600	22-1775	P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C71	.0047	400	22-1811	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C72	.018	400	22-2439							
C73	.15	400	22-2341	P488-15		PTE4P15		TP417	4TM-P15	
C74	.1	400	22-2340	P488-1		PTE4P1		PT401	4TM-P1	
C75	500	20000	22-1833	HV30C	TV3-502	MM-C2GT5	413-501	HV20035B	20DK-T5	
C76	500	20000	22-1832	HV30C	TV3-502	MM-C2GT5	413-501	HV20035B	20DK-T5	
C77	47									
C78	.1	600		P688-1	DF-104	PTE6P1		PT601	6TM-P1	Note 2

Note 1. When C2 becomes a 3 section unit, part no. is 22-2448
Note 2. Not used in all Models.
Note 3. Some Models use .0082MFD in this application (part #22-2431).

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	63-2804	QI3-133	AG-60-Z	AB-60	U-48	Volume
B	Shaft		Not Req.	Not Req.	K2-3	AK-4	D8-36	Attach to R1A
C	Switch		Not Req.	76-1	SWB	KB-1	US-26	Attach to R1A
R2A	7.5Meg	½	63-2805			AB-89	U-82	Focus
B	Shaft		Not Req.			AK-1	Not Req.	Attach to R2A
R3A	7.5Meg	½	63-2805			AB-89	U-82	Height
B	Shaft		Not Req.			AK-1	Not Req.	Attach to R3A
R4A	10KΩ	½	63-2825	QJ-359 *		SDB-727	UP14L	Contrast-Panel
B	200KΩ	½					UR254L	Brightness-Rear
C	Shaft						DS-36	Attach to R4A
R5A	1Meg	½	63-2810	QII-137	AG-61-S	AB-69	U-54	Vert. Hold
B	Shaft		Not Req.	Not Req.	K2S-3	AK-4	Not Req.	Attach to R5A
R6A	1500Ω	2	63-2812	WX-1500	A43-1500	VK-130	R1500L	Vert. Linearity-Wire wound
B	Shaft		Not Req.	Not Req.	FK3-1/4	Not Req.	Not Req.	Attach to R6A
R7A	5000Ω	½	63-2824	QJ3-114	AG-19-S	AB-11	U-12	Picture
B	Shaft		Not Req.	Not Req.	K2S-3	AK-4	Not Req.	Attach to R7A
R8	4000Ω	1	63-2159					AGC Delay-wire wound
R9A	1Meg	½	63-2810	QII-137	A6-61-S	AB-69	U-54	Tone
B	Shaft		Not Req.	Not Req.	K2S-3	AK-4	Not Req.	Attach to R9A
R10A	7.5Meg	½	63-2805			AB-89	U-82	Fringe Lock
B	Shaft		Not Req.			AK-1	Not Req.	Attach to R10A
R11	400Ω	1	63-3167					Buzz-wire wound

* CONCENTRIKIT EQUIVALENT - KIT K-2, BASE ELEMENTS & SHAFTS B17-116 & P1-128 (Panel), B10-129 & R7-212 (Rear)

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	NOTES
R12	100KΩ	½	63-1869	BTS-100K	
R13	100KΩ	½	63-1869	BTS-100K	
R14	330Ω	1	63-2386	BTA-330	
R15	2.3Meg	½	63-1926	BTS-2.2Meg	
R16	68Ω	½	63-1737	BTS-68	
R17	56Ω	½	63-1733	BTS-56	
R18	470Ω	½	63-1772	BTS-470	
R19	6800Ω	1	63-1821		
R20	16KΩ 5%	½			
R21	15Ω	½	63-1708	BTS-15	
R22	330Ω	½	63-1764	BTS-330	
R23	120KΩ	½	63-1873	BTS-120K	
R24	120KΩ	½	63-1873	BTS-120K	
R25	470Ω	½	63-1772	BTS-470	
R26	27KΩ	½	63-1845	BTS-27K	
R27	100Ω	½	63-1743	BTS-100	
R28	220Ω	½	63-1757	BTS-220	
R29	2700Ω	1	63-1573	BTA-2700	
R30	22KΩ	½	63-1841	BTS-22K	
R31	82Ω	½	63-1740	BTS-82	
R32	22KΩ	½	63-1841	BTS-22K	
R33	4.3Meg 5%	½	63-1957	BTS-4.3Meg 5%	
R34	10KΩ	½	63-1838	BTS-10K	
R35	6200Ω 5%	2	63-1579	BTS-6200 5%	
R36	680Ω 5%	½	63-1777	BTS-680 5%	
R37	470KΩ 5%	½	63-1896	BTS-470K 5%	
R38	1Meg	½	63-1911	BTS-1Meg	
R39	220Ω	½	63-1757	BTS-220	
R40	2200Ω	½	63-1799	BTS-2200	
R41	3900Ω	½	63-1810	BTS-3900	
R42	1000Ω	½	63-1786	BTS-1000	
R43	1Meg	½	63-1912	BTS-1Meg	

RESISTORS (CONT.)

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	NOTES
R44	470Ω	½	63-1771	BTS-470	
R45	8200Ω	2	63-1101	BTB-8200	
R46	220KΩ	½	63-1884	BTS-220K	
R47	220KΩ	½	63-1883	BTS-220K	
R48	220KΩ	½	63-1884	BTS-220K	
R49	56KΩ	½	63-1859	BTS-56K	
R50	27KΩ	½	63-1845	BTS-27K	
R51	22KΩ	1	63-1055	BTA-22K	
R52	220KΩ	½	63-1883	BTS-220K	
R53	680Ω	½	63-1779	BTS-680	
R54	330KΩ	½	63-1890	BTS-330K	
R55	1Meg	½	63-1911	BTS-1Meg	
R56	1.2Meg	½	63-1915	BTS-1.2Meg	
R57	1000Ω	½	63-1785	BTS-1000	
R58	47KΩ	½	63-1855	BTS-47K	
R59	2200Ω	1	63-949	BTA-2200	
R60	220Ω	2	63-3158		
R61	220Ω	2	63-3158		
R62	56Ω	½	63-1733	BTS-56	
R63	470KΩ	½	63-1897	BTS-470K	
R64	220Ω	2	63-3158		
R65	470KΩ	½	63-1896	BTS-470K	
R66	8200Ω	½	63-1824	BTS-8200	
R67	100KΩ	½	63-1869	BTS-100K	
R68	3900Ω	½	63-1810	BTS-3900	
R69	100KΩ	½	63-1982	BTS-100K	
R70	680KΩ	½	63-1904	BTS-680K	
R71	470KΩ	½	63-1898	BTS-470K	
R72	1.5Meg	½	63-1918	BTS-1.5Meg	
R73	27KΩ	1	63-1192	BTA-27K	
R74	330KΩ	½	63-1890	BTS-330K	
R75	100KΩ	½	63-1869	BTS-100K	
R76	47KΩ	½	63-1855	BTS-47K	
R77	100KΩ	½	63-1870	BTS-100K	

RESISTORS (CONT.)

ITEM No	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	NOTES
R78	220Ω	1	63-1789	BTS-2200	
R70	10KΩ	½	63-1838	BTS-10K	Note
R80	1000Ω	½	63-1785	BTS-1000	
R81	1.2Meg	½	63-1915	BTS-1.2Meg	
R83	100KΩ	½	63-1869	BTS-100K	
R84	18KΩ	½	63-1838	BTS-18K	
R85	100Ω	½	63-1744		
R86	100Ω	½	63-1744		
R87	3.3Meg	½	63-1922	BTS-3.3Meg	
R88	330Ω	2	63-2287	BTB-330	
R89	330Ω	2	63-2287	BTB-330	
R90	560Ω	½	63-1775	BTS-560	
R91	560Ω	½	63-1775	BTS-560	
R92	1Meg	½	63-1911	BTS-1Meg	
R93	1Meg	½	63-1911	BTS-1Meg	
R94	1Meg	½	63-1911	BTS-1Meg	
R95	27KΩ	½	63-1845	BTS-27K	
R96	100Ω	½	63-1744		
R97	470Ω	½	63-1771	BTS-470	
R98	47KΩ	1	63-1194	BTA-47K	
R99	10KΩ	2	63-2145	BTB-10K	

RESISTORS (CONT.)

ITEM No	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	NOTES
R100	22KΩ	½	63-1842	BTS-22K	
R101	47KΩ	½	63-1856	BTS-47K	
R102	220KΩ	2	63-3166	BTB-220K	
R103	470KΩ	½	63-1896	BTS-470K	
R104	100Ω	½	63-1744		
R105	15KΩ	½	63-1835	BTS-15K	
R106	100Ω	½	63-1744		
R107	100Ω	½	63-1744		
R108	100Ω	½	63-1744		
R109	100Ω	2	63-2396	BW-2-100	
R110	100Ω	2	63-2396	BW-2-100	
R111	47KΩ	2	63-1157	BTB-47K	
R112	39KΩ	2	63-1457	BTB-39K	
R113	27KΩ	1	63-1192	BTA-27K	
R114	2200Ω	10	63-3157	13/4A-2250	
R115	4.7Ω	½	63-1581		
R116	2.5Meg	2	63-2816		
R117	2.5Meg	2	63-[illegible]		
R118	4.7Ω	½	63-1581		
R119	4000Ω	7	63-2794	13/4A-4000	
R120	100KΩ	½	63-1870	BTS-100K	

Note. Some Models may use a 100KΩ resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: ZENITH PART No.	STANCOR PART No	MERIT PART No.	CHICAGO PART No	TRIAD PART No	RCA TYPE No.
T1	117VAC	710VCT	5VAC	5VAC	95-1323					
	④ 4A	.320ADC	④ 3A	⑤ 3A						
		tap ⑥		SEC. 4						
		550VCT		6.3VCT						
		.170ADC		⑦ 9.4A						

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: ZENITH PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.	NOTES
T2	238Ωtap ⑧ 3Ω, 60, 12Ω	.7Ω SEC. 2 0Ω SEC. 3 0Ω	S-19408						Horiz. Output Trans.
T3	170Ωtap ⑨ 16Ω, 15,5Ω		95-1326						Vert. Output Trans.
T4A	8Ω		95-1325						Horiz. Deflection Coils
B	5Ω								Vert. Deflection Coils
T5	1Ω		S-19411						Horiz. Linearity Coil
T6	18Ω	1.8Ω	S-19409						Width Coil

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: ZENITH PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T7	12.2KΩ CT	1.5Ω	590Ω CT	.22Ω	95-1324	A-3870	A-2901	RO-301 ①	S-51X ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: VIKING PART No.	REPLACEMENT DATA: QUAM PART No.	NOTES
SP1	10"	PM	3.1Ω	40-649	10J11	10A4A	
SP2	10"	PM	3.1Ω	40-649	10J11	10A4A	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: ZENITH PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Pil. Choke	0Ω		20-291				
L2	41.25MC Trap	0Ω		S-18209				Less core, core part #149-111
L3	39.75MC Trap	0Ω		S-18744				Less core, core part #149-111
L4	47.25MC Trap	0Ω		S-18210				Less core, core part #149-111
L5	1st. Video IF	0Ω		S-19738				Less core, core part #149-111
L6	2nd. Video IF	0Ω	0Ω	S-17907				Less core, core part #149-110
L7	Pil. Choke	0Ω		S-18084			4613	9.6 Microhenries
L8	3rd. Video IF	.1Ω	.1Ω	S-18730				Less core, core part #149-111
L9	4th. Video IF	.3Ω	.3Ω	S-18690				Includes C24, 1N64, Crystal detector part #103-1, coupling gimmick, series peaking coil part #S-17911, shunt peaking coil wound on resistor part #S-18751

ZENITH MODELS K2872R, K2873E (Ch. 28K20)

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (CONT.)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ZENITH PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L10	Series peaking Coil	1.5Ω		S-15128			4612	12 Microhenries
L11	Shunt Peaking Coil	4Ω		S-17343	19-3093	TV-181	6177	97 Microhenries
L12	Shunt Peaking Coil	12Ω		S-17958	19-3500	TV-188	6174	481 Microhenries
L13	Shunt Peaking Coil	23Ω		S-18749			4664	1.6 Microhenries
L14	Series Peaking Coil	6.5Ω		S-18750				Wound on resistor
L15	1st. Sound IF	1.8Ω	3.5Ω	S-18568				Less core, core part #149-85
L16	2nd. Sound IF	6Ω	Tap ⓐ 9Ω, 2.8Ω	S-19712				Includes C35, less coil shield and lug, coil shield and lug part #S-19714, less core, core part #149-96
L17	Quadrature Coil	5Ω		S-19001	20-1005			Less core, core part #149-110
L18	Horiz. Osc.	150Ω		S-17114	19-1577			Tapped ⓐ 90Ω
L19	Horiz. Lin. Coil	.5Ω		S-19735	20-1027			1 Microhenry

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA ZENITH PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L20	.21ADC	93.5Ω	3.1 Hy.	95-1334				
L21	.061ADC	188Ω	3.5 Hy.	95-1170	C-1080	C-2977		

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA ZENITH PART No. FUSE	ZENITH PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG (Slo-Blo)	½Aⓐ 125V	136-26	83-1883	313.500 (3AG 1/2A Slo-Blo)	357001	MDL ½	4405

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M2	Pilot Light	100-67	Type #47
M3	RF Tuner	S-18770	
M4	Crystal Diode	103-1	Video Detector (1N64)
M5	Centering Magnet	S-18439	
M6	Ion Trap	S-17461	
M7	Correction Magnet	S-19527	(4 used)
B1	Trimmer Cap.	22-2398	Horiz. Drive, 70-350MMF
	Cabinet	14-1500R	Model K2872R
	Cabinet	14-1501E	Model K2873E
	Back Assembly	S-19481	
	Safety Glass	192-156	
	Mask	196-213	Model K2872R
	Mask	196-212	Model K2873E
	Panel (Control)	57-1874	Modek K2872R
	Panel (Control)	57-1875	Model K2873E
	Knob	46-987	Off/On/Volume, Model K2872R
	Knob	46-998	Off/On/Volume, Model K2873E
	Knob	46-986	Channel Selector, Model K2872R
	Knob	46-997	Channel Selector, Model K2873E
	Knob	46-1003	Horiz. Hold
	Knob	46-1005	Tone, Vert. Hold (2 used)
	Knob	46-1016	Picture
	Knob	46-1017	Brightness
	Knob	46-1018	Contrast
	Knob	46-1067	Fine Tuning
	Disc (diffusing)	27-165	Channel Indicator

TROUBLE SHOOTING AIDS (CONT.)

VIDEO

LOSS OF VIDEO

Substitute V7 and check associated components. Check picture tube.

SOUND BARS

Check adjustment of A30 and A31. Check setting of local oscillator and alignment of video IF stages.

POOR RESOLUTION

Check alignment of tuner and video IF stages. Substitute V6 and V7. Check associated components.

ONE BLACK BAR ACROSS PICTURE

Check tuner, video IF and video amplifier tubes for heater to cathode leakage.

POOR CONTRAST

Check by substitution, V5, V6, and V7. Check associated components. Check picture tube.

AUDIO

WEAK OR NO SOUND

Check by substitution V6, V9, V10, V11 and V12. Check associated components including speaker and T7.

BUZZ

Substitute V9. Check adjustment of buzz control. If buzz is still present, align sound following sound alignment procedure. If buzz is still noticeable, check AGC delay control and substitute V6.

DISTORTED

Substitute V11 and V12. Substitute V6, V9 and V10. Check audio stages using audio signal generator and scope.

If Undistorted	If Distorted
Check adjustment of take-off trap and gated beam detector following audio adjustment procedure. Check components of V6B and V9.	Check components of stage where distortion is noted.

POWER

SET DEAD

Substitute V26 and V27. Check interlock. Check B+ filter network.

SMALL RASTER WEAK SOUND

Follow procedure outlined under "Set Dead".

DIM PICTURE

Follow procedure outlined under "Loss of High Voltage" and "Set Dead". Check picture tube for low emission.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check fuse located on the power supply chassis. Check by substitution V18, V19, V20, V21, V22, V23, V24 and V25. Check waveform W19.

If Unsatisfactory	If Satisfactory
Check waveform W18.	Check all components of horizontal output and damper circuit, especially the screen bypass capacitor, C70.

Check waveform W18.

If Unsatisfactory	If Satisfactory
Check all components of horizontal oscillator. Check solder joints of male and female plugs between the power supply chassis and the main chassis.	Check all components of horizontal discharge circuit. Check R102 for open.

INSUFFICIENT HIGH VOLTAGE

Follow procedure outlined under "Loss of High Voltage". Substitute V26 and V27. Check B+ filter components.

BLOOMING

Follow procedure outlined under "Insufficient High Voltage".

GENERAL

HAS RASTER NO SOUND NO PICTURE

Check by substitution V2, V3, V4 and V5. Check associated components.

SNOWY PICTURE

Substitute V1, V3 and V4. Check tuner and video IF alignment.

COMPLETE LOSS OF SYNC

Substitute V13 and check associated components.

The Trouble-Shooting photographs shown are made with permission of transmitting station WFBM-TV and in on way reflect the quality of the transmitted picture. Similarly, symptoms shown are assumed and are not indicative of the quality and workmanship of this receiving equipment.

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the RF Tuner Oscillator Circuit, it is necessary to remove the rear cover and supply power to set. Adjustments are made through the hole marked "Bull's Eye Adjustment" and are accessible one at a time as the Selector Switch is turned to that channel (fine tuning control must be set in the center of its range before making adjustments.

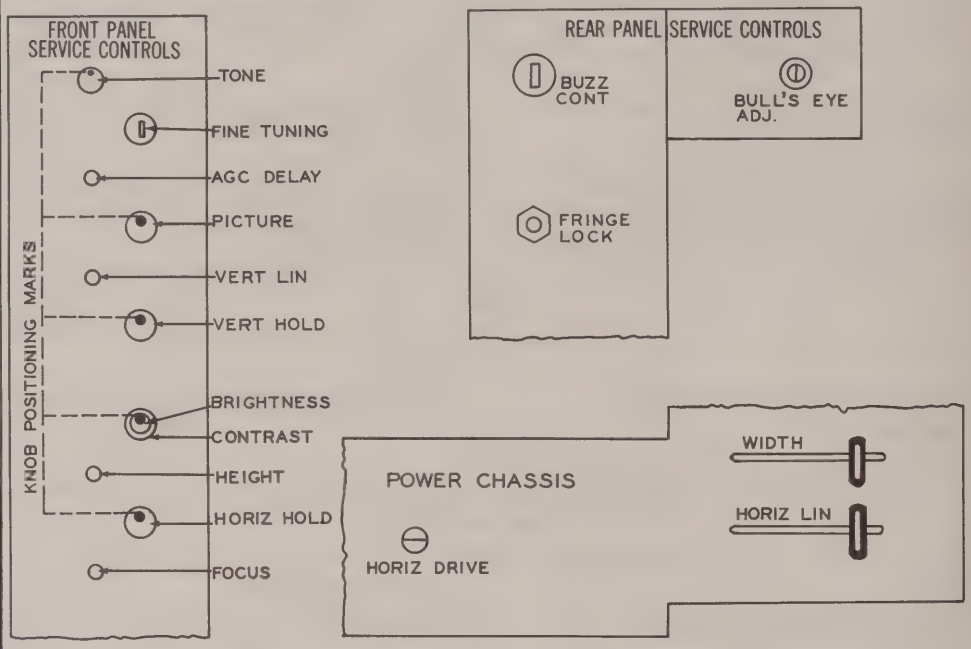
PICTURE TUBE SAFETY GLASS CLEANING

For picture tube safety glass cleaning, it is necessary to remove chassis. (See disassembly instructions).

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION



SPECIAL ADJUSTMENTS

AGC Delay Adjustments on front of Chassis. (See Horiz. Sweep Circuit Adjustment on page 11).

Fringe Lock Adjustment (On rear apron of chassis).

Turn the fringe lock control to 1/4 turn from full clockwise position. Adjust the vertical and horizontal hold for picture synchronization and check stability by switching off channel and back again. Slightly, retouch the fringe lock control adjustment, if necessary, for maximum stability while testing as above.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the Horiz. Oscillator Circuit can be made from the front panel service controls, adjust the horizontal hold control (L18) until picture synchronizes horizontally .

SOUND IF DETECTOR BUZZ ADJUSTMENT

Adjust the buzz control located on rear apron of chassis for maximum volume and minimum buzz. If results are unsatisfactory see alignment instructions on pages 6 and 7.

FUSES

One fuse is used for horizontal sweep protection . (See tube placement chart, for location) .

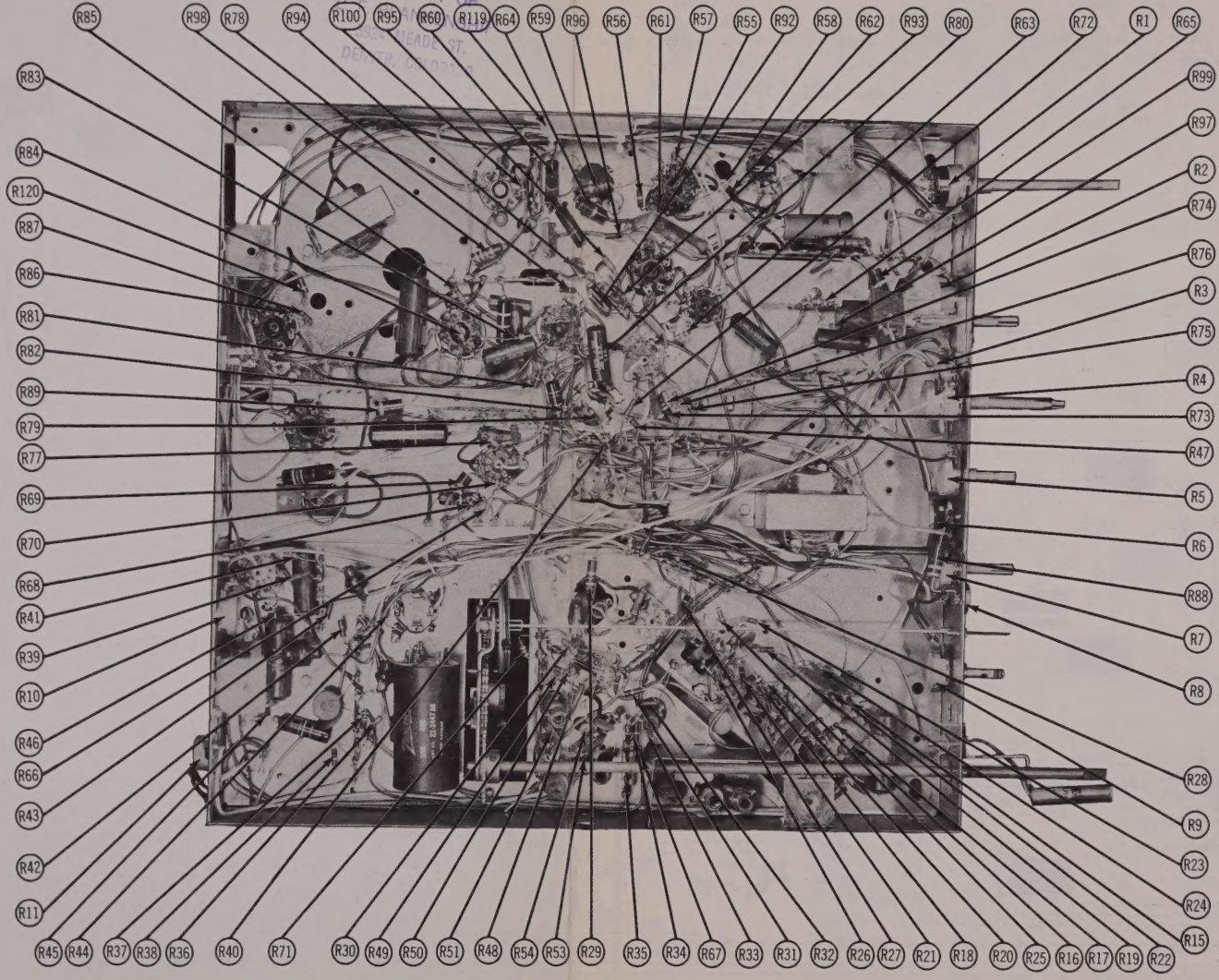
CENTERING

Centering is accomplished mechanically by adjusting a magnetic ring around the neck of the picture tube located flush against the yoke. Turn the knurled knob and at the same time rotate the ring around the tube until picture is properly centered.

ANTI-PIN CUSHION CORRECTION

Adjust the vertical and horizontal size control so that the corners and sides of the picture are visible. Bend the corrector magnet arms to obtain a raster having right angle corners and straight, parallel sides. Restore the picture to normal size.

PROPERTY OF



RF-IF CHASSIS-BOTTOM VIEW- RESISTOR IDENTIFICATON